ELEMENTS OF SPEECH:

AN ESSAY of INQUIRY INTO The Natural Production OF LETTERS: WITH An *APPENDIX* Concerning Persons Deaf & Dumb

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Ordered,

THat *a Diſcourſe preſented to the* R. Society, *Entituled,* Elements of Speech; *or,* An Eſſay of Inquiry into the Natural Production of Letters, *with* an Appendix concerning Perſons Deaf and Dumb, *be Printed by* John Martyn, *Printer to the ſaid* Society.

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THE PREFACE.

IT hath been to me a matter of Wonder, that in the Alphabets of all Languages whereof I have any knowledge; there is not to be found either Order or Perfection. The Characters (or written Letters) neither being adjusted to the sounds of Letters pronounced; nor disposed in the Alphabet according to any rational or Natural Order. The Consequences whereof have been, to render Languages more difficult to be learnt, and needlesly to advance Orthography into a troublesome and laborious Art; and to hide the Nature of Letters in obscurity, so as not to be found without much searching; nor perhaps to be sufficiently searched, by such as are moved to it onely by Philosophical Curiosity, and are not by any

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any neceſsity engaged to a pertinacious diligence. Though in this kind it muſt be acknowledged, that ſome excellent Perſons amongſt us, who are above my Approbation or Elogy, have conſidered this Subject with great Care and Felicity. And it having happened to me ſome years paſt, to have been deeply engaged in this ſame conſideration of the Alphabet, by a Worthy Deſigne of giving Relief to a Deaf and Dumb Perſon, in the year 1659. recommended to my Care: and being at laſt prevailed with by divers Perſons, who remember the ſucceſs of that Enterprize, to Communicate the way and method I then uſed; I have adventured to publiſh my thoughts concerning the Nature of Letters; more in reſpect of the Appendix, or Application of them to that excellent purpoſe, than that I eſteem them worthy to trouble the World, or able to produce any conſiderable addition to the diſcourſes of this Subject already extant: onely in regard of the obſcurity and ſubtilty of the difference of Letters, by reaſon of which, ſeveral Perſons are apt to make different

gueſſes

gueſſes and obſervations, and to be often unfixed, and change their thoughts upon better Conſideration, as I have experienced, and believe the ſame muſt have happened to others; it were to be wiſhed, that all who have conſidered this Subject would Communicate their thoughts and ways of finding out thoſe differences, which being done, every Hypotheſis would contribute ſome Light, as I hope this of mine may do; wherein I have endeavoured to abſtract my ſelf from prepoſſeſſion of Fancy, either by the Idea's *of faulty Alphabets, or the Notions of other Authors. And here I muſt intreat the Reader to do the like for me; and withal, to read the Treatiſe of Letters once over, without ſtaying to diſpute or examine particulars, which he will often find more plainly expreſſed afterwards; and then, if he ſhall think it worth his trouble, to go over it again, and at his pleaſure, ſtay to make trials and examinations.*

The Obſcurity of the Subject, and the Prejudice and Prepoſſeſſion of moſt Readers,

ers, may plead excuſe for any Ampliations or Repetitions that may be found, whilſt I labour to expreſs my ſelf ſo plain and full, that the Nature of Speech and Letters, ſo far as theſe preſent thoughts of mine reach to it, may be underſtood by all.

ERRATA.

PAge 3, line 10. *tion.* l. 12. *either, both to.* p. 10. l. 2. *deſigned to be.* p. 11. l. 9. *have their.* p. 12. l. 18. *bess of.* p. 17. l. 7. *the moſt apt.* p. 29. l. 1 *which is.* l. 4. *of one Organ.* p. 30. l. 1. *of Motion.* p. 34. l. 9 *Spirital, Ore-Vocal.* p. 41. l 10. *ed Original Letters.* p. 42. l. 9. *then the ſame.* p. 49. l. 13. *and Mykegloſs.* p. 53. l. 12. *Ng Naſo-Voca'.* [*Obs. there was intended a Character for Ng,* viz. n *with a tail like that of* g. *which muſt be underſtood where the Printer has imitated it by* n *or* y.] p. 63. l. 20. *Characters.* p. 73. l. 7. *Larynx, cannot.* p. 74. l. 15. *improperly.* p. 81. l. 5. [*Obs. the ſhort Vowels ſhould have been ranked thus;* Folly *under* o, Fat *under* a, Sell *under* e, Ill *under* i, Full *under* oo, *the other ſpaces left blank*] p. 81. l. *penult. Whiſpering, be.* p. 93. l. 8. *their ſubtle and.* p. 97. l. 12. 36 *Vowels.* p. 101. l. 19. *Letter. the.* p. 104. l. 7. *of the ſame.* p. 107. l. 16. *as they ſpeak.* p. 110. l. 7. *to that.* p. 123. l. 21. *nearer.* p. 129. l. 7. *theſe Perſons.* p. 130. l. 17. *reſpectively Letter ſpoken or written;* p. 135. l. 19. *out by being.* p. 136. l. 1. *Lips. Make him.* p. 144. l. 7. *ſhew him a.* p. 152. l. 21. *Pourtraitures.* p. 154. l. 15. *&c.* p. 157. l. 19. *(not to be thought on otherwiſe.)*

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ELEMENTS OF SPEECH:

An Essay of Enquiry into the Natural Production of Letters.

OF the Five Senses, *Two* are usually, and most properly called the Senses of *Learning*, as being most capable of receiving communication of Thoughts and Notions by selected Signes; And these are *Hearing* and *Seeing*.

The Object of Hearing is Sound, whose variety is so great, and conveighance so easie, that it brings in admirable store of intelligence and information to the common sense. And like to it in the same respects is the Object of Seeing.

Either of these learned Senses have their peculiar Priviledges: whereas Seeing requires Light, and a free Medium, and a right Line to the objects; we can hear in the dark, Immured, and by curve Lines, that is, Sound can pass to the Ears, where visual Rayes cannot to the Eye. But then, Sight takes in at a greater distance, and more variety at once, comprehending also Quiescent objects, which Hearing does not: and especially injoying the delightful variety of formes, and figures

figures, which come not to the Hearing. As to the preſent purpoſe, both theſe Senſes embrace their Objects at greater diſtance, with more variety, and with a more curious diſcrimination, than the other Senſes, ſo that they are moſt fitted to receive and diſtinguiſh *Signes* for Communication, and by their proper advantages mutually ſupplying the defects of either. And both together ſerve completely for the Reception and Communication of Learned Knowledge.

Now *Signes* for Communication may be contrived at pleaſure from any variety of Objects (eſpecially of one kind) appertaining to either Senſe. For example, Four *Bells* admit Twenty four changes in Ringing, and

Five *Bells* One hundred and twenty: each change may, by agreement and conſent, have a certain ſignification impoſed upon it, and ſo Communication may be performed at a diſtance by Hearing. And for the Sight, Four or Five *Torches* held up at a Diſtance in the Night, 1 or 2, or 3, or 4, and any, or more of them elevated, or depreſſed out of their Order, either in Breadth, or Longways, may by agreement give great variety of Notifications. And thus, Thouſands of Signes may be invented and agreed upon, and learnt, and practiſed. Thus the Drum and Trumpet by their ſeveral Sounds, ſerve for many kinds of Advertiſements in Military affairs: and Bells ſerve to proclaim a ſcare-fire, and (in ſome

ſome places) Water-Breaches; The departure of a Man, Woman, or Child; time of Divine Service; The hour of the day; day of the Moneth, *&c.* Common life is full of this kind of ſignificant Expreſſions, by Knocking, Beckoning, Frowning, Pointing and the like; and Dumb perſons are ſagacious in the uſe of them. And even *Brute* Animals make uſe of this artificial way of making divers motions to have ſeveral ſignifications, to Call, Warne, Chide, Cheriſh, Threaten, *&c.* eſpecially within their own kinds. But of all other, there is none for this uſe comparable to the variety of inſtructive Expreſſions by *Speech*, wherewith *Man* alone is endowed, as with an Inſtrument ſuitable to

the Excellency of his Soul, for the moſt eaſie, ſpeedy, certain, full communication of the Infinite variety of his Thoughts, by the ready Commerce between the Tongue and the Ear. And if ſome Animals, as *Parrots*, *Magpies*, *&c.* may ſeem to be capable of the ſame diſcriminations, yet we ſee, that their ſouls are too narrow to uſe ſo great an Engine. The chief, I ſay, of all ſignes, and which the *Almighty's* Providence, in the Creation of Man, indued him withall, and deſtin'd to that uſe, is *Humane voice* and the ſeveral modifications thereof by the Organs of Speech, *viz.* the *Letters* of the *Alphabet*, formed by the ſeveral Motions of the Mouth; and the great variety of Syllables compoſed of Letters, and form'd with

with almoſt equal velocity; and the endleſs number of words capable of being framed out of the Alphabet, either of more ſyllables, or of one; or ſometimes of a ſingle Letter, according as, by conſent and inſtitution, they are ordered to ſignifie the ſeveral parts of Speech or Language. And (which anſwers to the ſame end) the *Characters* or *Symbols* of theſe Letters expreſſed by Writing, or Printing, or Graving, *&c.* ſo as to remain viſible, and diſcernable by the Eye; *viz.* to each Letter a proper Character deſigned to ſignifie the Power or Sound of the Letter, that when I ſee Letters joyned, I underſtand the ſound, and am ready to pronounce it. And this is *Language* in *Counterfeit.* Whereas

Language, originally and properly (as the Word imports) is that of the Tongue, directed to the Ear by Speaking. *Written* Language is tralatitiouſly ſo called, becauſe it is made to repreſent to the Eye the ſame Letters and Words, which are pronounced.

And by theſe the *Tongue* and *Pen* doe mutually correſpond, and aſſiſt one another, Writing what we ſpeak, and Speaking what we write. And (as was ſaid of the Senſes, to which they ſerve) they ſupply the defects of each other by the peculiar priviledges of either. Swift, and ready, and familiar Communication is made by Speech, and when animated by Elocution, it acquires a greater life, and energie, raviſhing and cap-

captivating the Hearers. But then, Speech is confined to the Living, and imparted to onely thoſe, that are in preſence, and is tranſient and gone. *Written* Language, as it is more Operous, ſo it is more digeſted, and is permanent, and it reacheth the abſent, and poſterity, and by it we ſpeak after we are dead.

Now, as I ſaid, the Original of theſe Signes for Communication is found in *Viva voce*, in *ſpoken Language*, and therefore 'tis *Speech* we now chiefly conſider, I mean the Principles thereof, which are *Letters*. Now theſe Letters conſidered, as to their *Geneſis*, *i. e.* as they are made and fram'd by ſeveral *Motions* of the parts of the *Mouth*, are the natural Elements of Speech, but the uſe of them is *Artificial*,

tificial, viz. when they are compoſed, and deſigned by ſeveral Signs of Reſpective Notions: And hence Languages ariſe, when by inſtitution and agreement, ſuch a compoſure of Letters, *i. e.* ſuch a Word is intended to ſignifie ſuch a certain thing. And the Learning of a Language is (or at leaſt needs be) nothing elſe, but the informing our ſelves, and remembring what Compoſures of Letters are, by conſent and Inſtitution, to ſignifie ſuch certain Notions of things, with their Modalities and Accidents: I ſay, the *Motions* of the *Mouth* (ſpeaking largely) by which the voice is diſcriminated, and the Sound thereof in diſtinct formes received by the Ear, according to the number of their variety, are the *Natural Elements* of

of *Speech*; and the Application of them in their ſeveral compoſitions, or Words made of them, to ſignifie things or the Modalities of things, and ſo ſerve for communication of Notions, is *Artificial.*

And the former of theſe, the *Letters*, as they have the natural Production by the ſeveral checks or ſtops, or (as they are uſually called) *Articulations* of the Breath or Voice in their paſſage from the *Larynx* through the Mouth or Noſe, made by the inſtruments of Speech, are the ſubject of this preſent *Eſſay.* Worthy indeed of better conſideration, as being the *firſt Elements of all Humane Learning*, (to ſay nothing of the Propagation and Conſervation thereof;) and by which having once

ſurveyed

ſurveyed the true and proper natural *Alphabet*, we may eaſily diſcover the Deviations from it in the Characters thereof, in all the Alphabets in uſe: Either by Defect of ſingle Characters of Letters; or by Confuſion of them; or by expreſſing the Power of ſingle Letters by unapt Compoſitions; or by an abſurd reception of double Letters, into the number of the Elements, which ought to be onely ſingle and original; or laſtly by the incongruous pronunciations of ſeveral Letters, as they lie deſcribed to the Eye by Symbols or Characters of the Alphabet of ſeveral Languages, which indeed ought to be only one, or at leaſt all to be perfectly correſpondent each to other, according to their Origine in nature, though

though expreſſed by ſeveral Characters, after the humour and fancy of ſeveral Nations. Though it were much to be wiſhed, that, as there is but one ſingle way (whereof we are now treating) of the natural production of Letters, whereby to convey our thoughts by the ſound of Speech to the Ears of them that hear us; ſo there were throughout the world but one ſort of Character for each Letter, to expreſs it to the Eye, and that exactly proportioned to the Natural Alphabet formed in the Mouth. This, though diverſity of Languages continue, yet would render them much more eaſie to be learned, as to reading and pronouncing of them, and eſpecially as to the Writing of them, which now, as they ſtand, we find to be trouble-

troubleſome and difficult, and it is no ſmall part of *Grammar*, which treats of *Orthography* and *right pronunciation.*

And truly the Diſorder, into which the *Alphabet* is put, by the ſeveral ways fore-mentioned, ſeems to me of the ſame kind, though not ſo great, as if ſeveral Nations, uſing the ſame Characters, ſhould apply them differently, and that Sound, which one deſcribes by B, another ſhould do the ſame by C. *&c.* which by private conſent hath been ſometimes uſed in dangerous times, onely to obſcure their writing, and make it hard to be read by others not acquainted with the intrigue, but is quite contrary to any intention of advancing the facility of Learning.

But

But the chief deſign here intended by this accompt of the *Natural Alphabet*, is, to prepare a more eaſie and expedite way to inſtruct ſuch as are *Deaf* and *Dumb*, and Dumb onely by conſequence of their want of Hearing, (by ſhewing them the proper figures of the motions of the Organs, whereby Letters are framed) to be able to pronounce all Letters, and Syllables, and Words, and in a good meaſure to diſcern them by the Eye, when pronounced by another.

And although this cannot be directly and immediately taught, and learnt, as to every particular Letter of the Alphabet (as will be ſufficiently manifeſt in the enſueing diſcourſe) yet He, who has this exact knowledge of the Nature

Nature and Difference of Letters, by knowing withal, what can be readily done, and what cannot be immediately performed; will be able to purſue ſuch an attempt with ſteadineſs; and having made his firſt progreſs in what is obvious and feſible; will then (without expence of fruitleſs labour) proceed to ſeek out and invent other ways to compaſs about and accompliſh his deſigned effect.

And by theſe wayes (as I my ſelf have made ſome experiment) it is not impoſſible, no nor very difficult to be done, even in thoſe who were born Deaf and Dumb.

By what has bin premiſed, we may define *Language* (if we conſider it more materially) to be *An apt Connexion of Letters, forming*

forming and producing Words and Sentences. But if we conſider it more according to the Reaſon and Deſign thereof, then *Language is the moſt excellent Inſtrument for Communication. Or, a connexion of the apt ſignes for Communication of our Thoughts and Notions.* And *Speaking* is nothing elſe, than *A ſenſible Expreſſion and Communication of the Notions of the Mind by ſeveral Diſcriminations of utterance of voice*, uſed as Signes *i. e.* having, by Conſent, ſeveral determinate ſignificancies.

The *Matter* or Store, out of which theſe ſignes are framed, is the *Alphabet*, that is, the variety of ſingle different Letters, which Letters ariſe from the firſt original diſcriminations of voice, by

way of Articulation, whereby the Ear is able to judge and obſerve the differences of vocal Sounds. And as many ſuch different ſounds as can be made by ſingle Articulations, ſo many Letters there are in the ſtore-houſe of Nature, out of which to frame Signes for Communication by way of Speech or Language.

I ſaid, *Articulation*, becauſe there may be other ways of diſcriminating the voice, *E. G.* by *Acuteneſs* and *Gravity*, the ſeveral degrees of riſing and falling from one Tone or Note to another; and the ſeveral Kinds of Meaſures, Paſſions, Moods, Ayre, *&c.* out of which it were eaſie to frame a kind of Language, without Words, though not ſo Expedite nor Comprehenſive as the other. Now

Now to deſcribe accurately the differences, by which the *Formal Reaſon* of every letter is conſtituted, however it ſeem at the firſt apprehenſion familiar and eaſie, and no one but can ſay ſomething towards it; yet upon better conſideration will be found very difficult: Becauſe the Motions and Figures *within* the mouth are abſtruſe, annd not eaſie to be diſtinguiſhed, eſpecially thoſe of the Tongue, and ſeveral parts of it, which is moved, through the help of many Muſcles, ſo eaſily, and Habitually, and variouſly, that we are ſcarce able to give a judgement and deſcription of divers Motions and Figures thereby framed in the Mouth: And alſo becauſe moſt are apt to ſeek all the Differences of Let-

ters in thoſe Articulating Motions, whereas ſeveral Combinations of Letters are framed by the very ſame Motions of thoſe Organs, which are commonly obſerved, and are differenced (as ſhall be ſhewn) by other concurrent cauſes. And laſtly, by reaſon of the Prepoſſeſſion of the Judgement of moſt men from their Infant-breeding, of which I have met with much Experience; and it may be ſeen in the writings of ſome Learned men, who coming to treat of the Nature of Letters, ſpeak of them by Tradition, as of ſome remote exotick thing, whereof we had no knowledge, but by uncertain fabulous relations. And although I have bin told of ſome more accurate Authors, who take not the

the vulgar Alphabets and Rudiments of Grammar for their Canon; yet I have refrained to look into them, for fear of being led away by other men's fancies; whereas I rather chose to consult Nature at Hand. And herein I cannot hope to have escaped all prejudicies of fancy, but do willingly submit those mistakes, into which I may have fallen, to the better consideration of others, who shall have made research into this business with more felicity. And certainly the free thoughts of many separate persons using diligence herein, compared together, select choice being made of the most happy adventures in each of their several *Hypotheses*, is the surest way to advance this kind of Essay to a

good perfection. To which, if any thing be contributed by this that I have done, I ſhall not wholly have miſſed my end.

Of *Letters* the *Material* part is *Breath* and *Voice*; the *Formal* part is conſtituted by the *Motions* and *Figures* of the *Organs* of *Speech*, affecting the Breath or Voice with a peculiar ſound, by which each Letter is diſcriminated. For either of theſe there are proper Organs. For the Former, the *Lungs*, *Aſpera Arteria*, *Larynx*, *Uvula*, *Noſe*, and the whole *Arch* of the *Palate* or Roof of the Mouth. The *Lungs* are as *Bellows*, which ſupply a force of Breath: the *Aſpera Arteria* is as the noſe of *Bellows*, or as a channel in the ſound Board of an Organ, to collect and conveigh the Breath,

Breath, and ſomewhat more, by a power of contracting and dilating it ſelf, which thoſe have not.

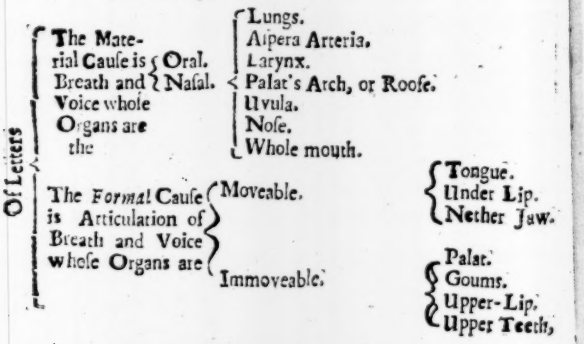
The *Larynx* both gives *paſſage* to the Breath, and alſo, as often as we pleaſe, by the force of Muſcles, to bear the ſides of the *Larynx* ſtiffe and near together, as the Breath paſſeth through the *Rimula*, makes a vibration of thoſe Cartilaginous Bodies which forms that Breath, into a Vocal ſound or Voice, which by the *Palate*, as a *Chelis* or ſhell of a Lute, is ſweetened and augmented. The *Uvula*, as a Valve, opens and ſhuts the paſſage of Breath or Voice through the Noſe. The *Noſe*, ſometimes giving paſſage to Breath or Voice, in ſpeaking alters their ſound,

and gives a Material diſcrimination, by which the general ſound of Breath or Voice may be diſtinguiſhed into *Oral*, or *Naſall*, or, (to ſpeak more accurately) *Ore-Naſal*. And thus alſo the *Whole mouth*, as it gives paſſage to Breath and Voyce, and a diſtinct ſound, from that of the Noſe, ought to be accompted one of the Organs of the Material part of Letters.

By the way obſerve, that Letters may be framed by Articulation of onely Breath, for ſecret communication near at hand, as in *whiſpering*. But the moſt uſeful way of eaſie and free communication, being by the Voyce, and the Motions being the ſame in *whiſpering* and in *ſpeaking*, it is intended here, to conſider *vocal* Speech

Speech alone, as that to which this Diſcourſe refers. Though it be true (and ought to be well heeded) that divers letters have no Vocal ſound, if pronounced alone, but do immediately affect the vocal ſound of other Letters, to which they are joyned in Speech, by affecting firſt the Breath in their own proper Motions and Figures, ſuch are F. S, and ſome others. The Organs of the Later, the *Formal part* of Letters, are the *Tongue*, *Palate*, *Goums*, *Jaw*, *Teeth*, *Lips*. Of which the *Tongue* and *under-Lip*, and *nether-jaw* are *moveable*. The reſt are immoveable, *viz.* as to their uſe in ſpeech. Articulations are made by the Motions of the *moveable* Organs to, or towards the *Immoveable*. As, the *Tongue*, (which is the chief

chief inſtrument of Speech) is every way moved in its parts to and from all parts of the Palate, and Goums, and upper Teeth, except the very cavity or Arch of the Palate, which is always kept open to help the ſound. The under lip is moved to the upper lip, or upper Teeth. And theſe motions are attended by the motions of the nether-jaw.



In the framing of every Letter, there is an Articulation (though not

not to every Letter a *ſeveral* Articulation; for ſometimes two or three have the ſame, and are differenced onely by their material cauſes.) By *Articulation* I mean a peculiar Motion and Figure of ſome parts belonging to the Mouth between the Throat and Lips, whereof ſome are more eaſie to be diſcerned and deſcribed; as thoſe made with the Lips, P. B. M: with the Lip and Teeth, F. V: with the Tongue and Teeth, θ. ð. *i. e. th. dh.* and thoſe with the Tongue and Goums, and Tongue and Palate, which are cloſe ſtopped, as T. D. N; KG. NG. The reſt are more difficult, and moſt of all the Vowels, where there are peculiar Figures of the Cavity of the Mouth, between the Tongue and the Arch of the Palate,

Palate, whilſt the Tongue moves into a Poſture required to each Vowel, which is made without the Lips.

That I may be the eaſier underſtood, I do comply with the Antients, in diſtinguiſhing Letters into *Vowels* and *Conſonants*; yet not wholly upon their reaſon, *viz.* That a *Vowel* may be ſounded alone, a *Conſonant* not without a *Vowel*; which if examined will not be found all true, for many of the Conſonants may be ſounded alone, and ſome joyned together, without a Vowel, as *Bl*, *St*; and as we pronounce the later Syllable of *People*, *Rifle*, &c. though it be true of ſome Conſonants, as the Mutes, P. T. K. that they can make no ſound alone: But from another difference,

ence, wnich is, That in all *Vowels* the paſſage of the mouth is open and free, without any appulſe of an Organ of Speech to another: But in all *Conſonants*, there is an Appulſe of the Organs, ſometimes (if you abſtract the Conſonants from the Vowels) wholly precluding all ſound; and in all of them, more or leſs, checking and abating it.

Now from hence ariſeth the facility of joyning a Conſonant to a Vowel, becauſe from an Appulſe to no Appulſe (or an Apperture) is eaſier, (becauſe the Motion is not half ſo much,) than from one Appulſe to another. And we find in the Motions from one Appulſe to another, in joyning of Conſonants, ſome (according to their eaſier aptneſs of

of Notion, or nearneſs of Nature or ſituation) to be readyer and eaſier joyned in one ſyllable, than others: Which made that obſervation of the *Grammarians*, of the eaſie pronunciation of a Mute before a Liquid, which do not therefore neceſſarily make the Preceding *Vowel*, by poſition, long in Quantity, as *Patrem*.

The Diſtinction of *Articulation of Breath* and the *Articulation of Voice* muſt be well heeded, becauſe in it conſiſts the onely difference of many Letters, as ſhall be ſhewn. For it is one thing, to *Breath*, or give an Impulſe to breath alone; another thing, to *vocalize* that breath, *i. e.* in its paſſage through the *Larynx* to give it the ſound of Humane Voyce. As through a Horne or Cornet

Cornet, or Trumpet, you may, if you pleaſe, emit onely Breath without any other ſound than of wind; or you may with the ſame Breath, regularly blown, raiſe the proper voice or ſound of thoſe Inſtruments. *Breath* then muſt be underſtood diſtinctly from *Breath vocalized*, or Humane voice, and either of them in their diſtinct Beings and Sounds may be, and are Articulated by the Motions of the Organs.

Now, though ſeveral ſingle Letters nakedly conſidered, are found to be Articulations onely of Spirit or Breath, and not of Breath *vocalized* (as appears if you pronounce S. F. *&c.* abſtracted from all vowels) yet there is that property in all Letters, of Aptneſs to be conjoyned in *Syllables*

lables and *Words*, through the voluble motions of the Organs from one ſtop or figure to another, that they modify and diſcriminate the Voice without appearing to diſcontinue it. And ſo Letters may well enough be termed *Articulations of Voice* in reſpect of Speech, which yet in their own ſimple abſtracted Nature are but *Articulations of Breath.*

To come now nearer to our Inquiry into the *Production of Letters*, we are firſt to inveſtigate the *variety* of *Motions*, and *Figures*, made by the Organs, which ſerve for Articulation. And then the *Variety* of *Matter*, to which thoſe Articulations are ſeverally applyed. For it will be found, that the ſame Articulation makes Impreſſions of

of different ſounds, or (which is the ſame) Letters, according as the ſubject matter, which is to be Articulated, is different: as one and the ſame Seal, imprinted upon ſeveral pieces of wax of different colours, as Yellow, Red, Green, Black, will make ſo many diſtinct ſigns (if ſignifications be impoſed upon them) to the Eye, as there are different Colours in the Matter, or Wax, which receive the ſame Impreſſion. Thus the ſame Articulation; if of *Breath*, makes one letter; if of *Breath vocalized*, or voice, another; If of *voice Naſall* (*i. e.* when the *Uvula* is opened, and the voice paſſeth into the Mouth, and is there Articulated, and at the ſame time hath a free paſſage through the Noſe) then it

makes another; and laſtly, if of *Breath Naſal*, then another. Thus the *Matter* of Sound, which is to be diſcriminated by Articulation, if it be of four kinds, *Spirital*, *Vocal*, *Naſo-ſpirital*, *Naſo-vocal*, (it is for ſhortneſs-ſake, that I do not ſtile them more accurately, *viz. Ore-Spirital*, *Ore-Naſal*, *Ore-Naſo-Spirital*, *Ore-Naſo-Vocal*;) then every Articulation may produce four Letters. But the deſign of Speaking, being to Communicate our Thoughts, by ready, eaſie, and graceful Pronunci-ation, all kind of Letters have been ſearched out, that were ſerviceable for the purpoſe, as Commodious Elements of Speech, and ſuch diſcriminations as were not ſo, whereof many may be found, (all Articulations not ſuiting with all matter) they were left out and laid aſide. All

All Articulation is made *within* the mouth, from the Throat to the Lips inclusively, and is differenced partly by the Organs and several parts of Organs (already described) used in it; and partly by the manner and degree of Articulating: which later is, either by *Appulse*, *i. e.* when one of the moveable Organs toucheth, and rests upon some of those, that are Immoveable; Or else onely by inclination of the moveable Organ to the immoveable, *without Appulse*, the passage through the mouth remaining free and open. If there be no Appulse of one Organ to another, the Letters by other several postures and inclinations of the Organs are *vowels*. But when there is an Appulse of one Organ to ano-

ther, the Letters, which are ſo framed, are *Conſonants.* Again, the Appulſe is either *plenary* and *occluſe*, ſo as wholly to preclude all paſſage of Breath or Voice through the mouth; or elſe *partial* and *pervious*, ſo as to give them ſome paſſage out of the mouth: and this later affects the Sound divers ways, giving it a Liſping, or Hiſſing, or elſe emitting it ſmooth, or elſe jarring.

The nature of *Conſonants* being framed by Appulſe, is (as was ſaid before) much eaſier to be diſcerned, than that of the *Vowels.* I ſhall therefore indeavour, firſt to deſcribe their differences, and how they are framed; taking the number of Conſonants, not from the *Grammatical Alphabets* of any Language, but from the *diverſity*

of

of Sounds framed by ſingle Articulations with Appulſe, which I find in any uſage; eſpecially in our, and neighbouring Nations, ſuch as are moſt needful for any among us, that are Deaf and Dumb, to learn. And thus they ordinarily amount to 19. beſides 2 or 3 more (to be ſpoken of in their place) which will be found among the Vowels: omitting ſome other uneaſie Letters, which I ſhall after deſcribe, and poſſibly may be in uſe with ſome Nations.

If a cloſe Appulſe be made by the Lips, *viz.* by the Under-Lip, to the Upper-Lip, then is framed P, or B, or M; if it be made by the end of the Tongue to the Goums, T. or. D. or N. If by the Boſſe of the Tongue to the

Palate, near the Throat, then K. or G. or Nᵍ. ſo there are 9 Conſonants made by *cloſe Appulſe*, and they evidently anſwer one another in their Properties; whether you compare them in *reſpect of the Organs*, the 3 Labial B. P. M. are Parallel to the 3 *Gingival* T. D. N, and to the 3 Palatick K. G. Nᵍ; or whether in *reſpect of Sound*; P. T. K. are Articulations of Breath; B. D. G. (if you compare B to P; D to T; and G to K;) are made with the very ſame Appulſe and Motion of the Organ; and are differenced onely by being Articulations of Voice, or Breath vocalized: which is eaſily diſcerned, if you ſtrive to pronounce P. abſtracted without a Vowel, then it will be wholly *Mute*, becauſe it is nothing

thing but Breath ſtopt: but if you in the ſame manner go to pronounce B, there will be a *murmuring* ſound of the Voice, formed in the *Larynx*, and paſſing till it be ſtopt by the Appulſe of the Lips. And ſo of the reſt.

M. is an Articulation of voice, by cloſe Appulſe of the Lips; ſo far perfectly the ſame with B: but there is this difference added, that at the ſame time, paſſage is opened for the Voice through the *Noſe*. And the like is N. in the Goums, and N^{e} in the Palat. Thus in *reſpect* of *Appulſe of Organ* P. B. M. are the ſame; and T. D. N. and K. G. N^{e}. In *reſpect of matter of ſound* P. T. K. do perfectly agree, and likewiſe B. D. G. and M. N. N^{e}. And in *reſpect of the manner*, *viz.* Cloſe-

neſs of the Appulſe, they *all* agree. And theſe 3 properties ſufficiently diſcover the Nature of theſe 9 Conſonants, and therewithal, how properly N$^{\wedge}_{G}$ is ranged amongſt Original letters. See in a Scheme.

Letters framed by Appulſe.

		Mute	Murmur-mute	Naſo-vocal.
Occluſe.	Labial	P	B	M
	Gingival.	T	D	N
Pervious.	Palatick	K	G	N$^{\wedge}_{G}$

The other ſort of Appulſe is *partial* and *pervious*, giving ſome paſſage to *Breath* and *Voice*: of which kind, Two are made to the upper Teeth, and cauſe a Liſping ſound, the Breath being ſtreined through the Teeth. One whereof is of the under Lip to the upper Teeth, which, if Breath onely paſs, makes F. but if the Breath

Breath be vocalized, the ſame Appulſe makes V. Another is of the Tongue to the upper Teeth, and in like manner with the former, makes *Th*, and *Dh*. or θ. ȝ; which ſo juſtly correſpond with F. and V. and are made by ſingle proper motions of the Organ, that they muſt needs be acknowledged *Letters*, and not to be compounded of T and H, or D and H, but require to be deſcribed by ſingle proper Characters, as well as other Letters. I would deſcribe them by θ and ȝ.

And thus far the nature of theſe 13 *Conſonants* lies fair to be perceived, becauſe the Appulſe is ſo manifeſt, being either cloſe, as in the former 9; or Bold and forward to the Teeth, as the other 4.

Next, there is a *Partial Pervi-*

ous

ous Appulſe of the End of the Tongue to the Goums, giving the *Breath* a ſtreight paſſage there, by which a hiſſing ſound is made; the ſides of the Tongue at the ſame time reſting firmly on the ſide-Teeth. And by this, if Breath alone paſs, is made the Letter S; but if Breath vocalized, then the poſture and motion makes Z. Again, the end of the Tongue born more downwards, and the middle of it born up nearer the Palate, the ſides reſting on the Teeth, makes, if the Breath paſs, *Sh*, or, if Breath vocalized, *Zh*. which is properly that, which is deſigned by J conſonant, as *Forreiners* pronounce it. The Figures in the mouth of *Zh*. and the vowel I, are much alike, which might give occaſion of ſupplying *Zh*. by the

the character of J Conſonant: And the vowel I, partaking alſo of the nature of a Conſonant, added to Z, comes very near to the ſound of *Zh*, as *Zya*; but this hath ſomething more of *Gingival* Figure in it.

Thus we have 17 *Conſonants*, which bear a certain Analogie; out of which, if you take M. N. Ng, there remain ſeven pairs, of which each Letter hath the very ſame motion and Appulſe of the Organs, with his compeer, and differ onely in relation to ſound, one being an Articulation of *Breath*, the other of *Voice*, and they ſtand thus

p	t	k	f	th	s	sh
b	d	g	v	dh	z	zh

And theſe in *Whiſpering*, cannot be diſtinguiſhed, except by prejudice of Fancy; but every pair will be the ſame without any difference, and conſe-

conſequently but one Letter. So that the *Language of Whiſpering* is perform'd with 7 Conſonants fewer, than the *Language* of *Speaking*. And I might digreſſe to tell, how ſome of the *Antients* may be thought ſometime to have uſed a leſs number of Letters in their Languages; as may be proved by the celebration of thoſe, who added to their *Alphabet*, by inventing or bringing other Letters, than they uſed.

And for the other 3 Letters M. N. Ng. though they make not ſuch pairs as the other 14, yet they are within the obſervation of not differing by Motion or Poſture from the other cloſe Letters of the ſame Organs, but onely by Sound; the Voice paſſing through the *Noſe*, as hath been ſaid. And

it

it were eaſie to add a *Naſal* Letter to each of the other pair of *Liſping* and *Sibilant* Letters, but they are found not to be ſo gracefully pronounced, nor ſufficiently diſcriminated in *Pervious* Appulſes, where the Breath hath paſſage through the Mouth and Noſe both at once; but onely in the Appulſes, which are *Occluſe*; where the voice is ſtopt, and onely murmures within the Mouth, and paſſeth freely by the Noſe. And this is the reaſon, there are but 3 *Naſal* Letters commonly in uſe, becauſe there are but 3 *occluſe Appulſes*. And here it is remarkable, that in the framing of theſe 17 Conſonants, there are but 7 different Motions or Poſtures of the Organs; and conſequently but 7 Diſcriminations ariſing

ariſing from thence, which are between the 7 pairs before ſpoken of, each pair from the other, in ſuch order as they are there ſet down.

I ſhall adde one Remark more concerning theſe Conſonants, That, whereas I have ſometimes in diſcourſe, put many *ſeveral* perſons to conſider what the difference might be in any Pair of them, as between P, and B; T, and D, *&c.* And upon tryal they have been ready to fancy, (and I have met with it in the Writings of ſome) that the difference lies in the *manner* of *Appulſe*, one being made by a Fuller or Ranker Appulſe than the other, or, ſome ſuch thing, which they thought they perceived, but could not well expreſs. The Truth is, There may be

be ſome ſuch little difference, but from another cauſe conſequential to that which is already aſſigned, which is this: All *Tuneable* Sounds, whereof Humane voice is one, are made by a regular vibration of the ſonorous body, and Undulation of the Air, proportionable to the Acuteneſs or Gravity of the Tone. Now *Breath* flowing in a ſmooth ſtream from the Lungs through the Mouth; and *Voice* from the *Larynx* in a curled vibrated Figure, it may very well be, that *Breath vocalized*, *i. e.* vibrated or undulated, may in a different manner affect the Lips, or Tongue, or Palate (while they ſtop or check it) and impreſs a ſwift tremulous motion, which Breath alone paſſing ſmooth, does not. And ſo we may feel

feel within our Mouth, ſome difference between P and B. which yet is not ſufficient to diſtinguiſh them to the Ear of another perſon; nor of it ſelf to conſtitute them diſtinct Letters of the Alphabet; but they are diſtinguiſhed by the *S*ound made by that Vibration.

There remain two odd Conſonants, which have no fellows, nor ſtand in pairs, and thoſe are L and R; both of them *Gingival* in reſpect of the Appulſe of the Organs. L is made by the ſame Appulſe of the end of the Tongue to the Goums, as are T and D; but then the Sides or edges of the Tongue are drawn in, and leave ſmooth and free lateral paſſage for the voice, *i. e.* by the ſides of the mouth, or one of them at leaſt

leaſt. You may eaſily perceive it, if you pronounce L. after, or before T. *Lt. Tl.* where you keep the end of the Tongue ſtill in the very ſame poſture in both Letters, and onely move the ſides of it.

R is made by a *Pervious* Appulſe of the end of the Tongue, with its edge to the Goums, the Tongue being held in that poſture, onely by the force of the *Geneogloſſe*, or *Myleogloſſe* Muſcles, and not reſting any where upon the Teeth; except onely touching them looſely, ſo as to cloſe the paſſage of Breath every where by the ſides, and conduct it to the end of the Tongue, And this with a ſtrong Impulſe of Breath vocalized, ſo as to cauſe a trembling and vibration of the

whole Tongue; which vibration being ſlow, does not *tune* the voice, but make it *jarre*; the Tongue not reſting, but making a light Appulſe in parts of the end of it, and being born ſtiffely, as with a Spring, by the Muſcles, (eſpecially by the *Geneogloſſe*) and agitated by ſtrong impulſe of Breath. And it is obſervable, that in all the other Conſonants, the *Moveable* Organ reſts and bears ſomewhat ſtrongly upon the *Immoveable*; as is evident in all the 9 Letters made by *cloſe* Appulſe, and in the Four *Dental* Letters, and in L, and laſtly in the Four *Sibilants*; ſome of which laſt being of neareſt Appulſe to R, will ſhew this better by being compared together; e. g. Z. and R. In Z. the Tongue bears firme upon the upper

upper ſide-Teeth, and ſo the end of it being a little flatted, is born ſteadily near the Goums, making a *Rimula*, by which the hiſſing ſound is produced, the ſteadineſs of the poſture of the Tongue reſiſting that tremulous vibration, which it ſuffers in pronouncing R. But in R. the Tongue does not reſt or bear as aforeſaid, but is held ſtifly in its whole length by the force of the Muſcles, ſo as when the impulſe of Breath ſtrikes upon the end of the Tongue, where it finds paſſage, it ſhakes and agitates the whole Tongue, whereby the ſound is affected with a trembling jarre. And this is the cauſe, why they, whoſe Muſcles are weak or flaccid, are unapt to pronounce this Letter R.

Now, as before I gave a Scheme of the *Occluſe* Conſonants with their differences, ſo I ſhall here add one of thoſe, which are *Pervious*, and then all together.

		Blaſe.	Murmure Blaſe	Sibilant	Murmure	Semi-vocal	Semi-vocal
Letters framed by Appulſe *Pervious.*	Labiodental	F.	V.		Sibi	Smooth	jarr
	Lingua-dental	Th	Dh		lant	or ſize	ing
	Gingival			S	Z	L	R
	Palatic.			Sh	Zh		

APPULSE	SOUND	ORGAN		Or thus more properly by Sound or MATTER.
Cloſe	P. Mute———	Labial———	p.	Spirital.
	B. Murmure-mute -	Labial———	b.	Vocal or Murmurant.
	M. Naſo-vocal——	Labial———	m.	Naſo-vocal.
	T. Mute———	Gingival———	t.	Spirital.
	D. Murm-mute——	Gingival———	d.	Vocal.
	N. Naſo-vocal——	Gingival———	n.	Naſo-vocal.
	K. Mute———	Palatic———	k.	Spirital.
	G. Murm-mute ——	Palatic———	g.	Vocal.
	N^{o}. Naſo-vocal ——	Palatic———	y.	Naſo-vocal.
Pervious	F. Blæſe--———	Labiodental —	f.	Spirital.
	V. Murm-Blæſe. —	Labiodental—	v.	Vocal.
	Th. Blæſe ———	Lingua-dental -	θ.	Spirital.
	Dh. Murmur-Blæſe-	Lingua-dental -	ð.	Vocal.
	S. Sibilant-———	Gingival ———	s.	Spirital.
	Z. Murm-Sibilant --	Gingival ———	z.	Vocal.
	Sh. Sibilant. ———	Palatic ———	ſh.	Spirital.
	Zh. Murm-Sibilant -	Palatic———	j.zh.	Vocal.
	L. Semi-voc. ſmooth-	Gingival———	l.	Vocal-lateral.
	R Semi-voc. jarring.	Gingival———	r.	Vocal-jarring.

Thus every of theſe Conſonants may be differenced and defined by theſe three reſpects, 1. Sound or *Matter*. 2. Appulſe of *Organ*. 3. Manner of *Appulſe*. e. g. B. is Vocal, Labial, Occluſe; T. is Spirital, Gingival, Occluſe; F. is Spirital, Labiodental, Pervious;

ous; and the reſt in like manner.

It will give much light to what hath hitherto been ſpoken concerning *Conſonants*, to take a better view of what has been already hinted, and to lay this Hypotheſis; *viz.* That the number of Letters in Nature, is equal to the number of Articulations, ſeverally applyed to every diſtinct matter of Sound. The Articulations of Conſonants, *i. e.* the different motions and poſtures of the Organs of Speech, by which they are formed (though poſſibly more may be found) I ſuppoſe to be 9, whereof I have deſcribed 7 in 17 Conſonants, and added thoſe of L and R. Now let *Breath* alone, in the Mouth, be firſt Articulated by theſe, there will be 9 Conſonants,

P.

P. T. K. F. Th. S. Sh. L. R. Secondly, vocalize the Breath, and make the ſame Articulations, there will again be 9 more differences of ſound, and will make the Conſonants B. D. G. V. Dh. Z. Zh. L. R. Thirdly, make the ſame Articulations again, and let the voice paſs through the Noſe, and there will be 9 differences more, which will make M. N. Ng. V. Dh. Z. Zh. L. R, if the laſt ſix be ſpoken through the *Noſe*, in ſuch manner as we hear it done by thoſe, who (through an ill habit, or by an ill conſtitution or corroſion of the *Uvula* or Valve, which opens and ſhuts the paſſage of Breath to the Noſe) are ſaid to ſpeak in the Head, or *Snoch*. Laſtly let *Breath onely* in like manner paſs *through the Noſe*, and have

the *ſame Articulations*, and there will be nine more different ſounded Letters, which I cannot diſcribe, but with Characters before uſed, *viz.* M̒. N̒. N$_g$̒. F̒. Th̒. S̒. Sh̒. L̒. R̒. Thus there will be by one *Primary*, joyn'd ſeverally with Four *Secondary* differences, four times Nine Conſonants, *viz.* 9. Spirital, 9. Vocal, 9 Naſo-Spirital, and 9. Naſo-Vocal; in all, 36.

But finding no neceſſity of ſo many, (ſince Languages are various enough, and copious with thoſe in uſe;) and withal, that the 6 *Naſo-Vocal* Letters, which are made by *pervious* Appulſe, are not eaſie nor graceful to pronounce, we reject them, and retein onely the Uſe of the other 3. which are by *cloſe Appulſe*, and

and are facile and graceful, *viz.* M. N. Nᵍ̀. And for the ſame reaſon we much more exclude 6 of the *Naſo-Spiritals*, *viz.* thoſe made by *pervious* Appulſe. And for the other 3. though ſome Nations poſſibly may take the pains to pronounce them, (eſpecially the laſt of them, formed in the Palate, Nᵍ̂. which perhaps may be the Genuin ſound of the *Hebrew* ע) yet being found harſh and troubleſome, they are more generally diſuſed, whilſt moſt Nations rather ſtudy to ſweeten and ſoften their Pronunciation, and to that end are more ready to change or leave out in their Compoſitions of words, and Conjugations, and words, borrowed from other Languages, ſuch Letters, as leſs ſuit with *eaſie* Pronunciation.

Again

Again, it falls out, that L. and R. being in extreams, one of Roughneſs, the other of Smoothneſs and freeneſs of Vocality, are not eaſie, in tract of *Vocal ſpeech*, to be pronounced ſpiritally, as are P. T. F. S. *&c.* but are apt to get a tincture of *Vocal ſound*, (which you will perceive, if you try to pronounce L a, or R a, with L and R ſpirital;) or elſe with ſtriving to avoid it to become too *Guttural*; and therefore obtain not a diſtinct Character, and place in the Alphabet, as Articulations of Breath: Though we meet poſſibly with ſomething of this nature in the *Welch* pronunciation of L, and the *Greek* of R. And when amongſt them we find LL as in *LLoyd*, *&c.* or ῥῥ. ἐῤῥέθην' we may conceive one of each pronounced *Spiritally*,

ly, the other *Vocally*. But in attempting to pronounce theſe two Conſonants, as likewiſe the *Naſals*, and ſome of the vowels *Spiritally*, the Throat is brought to labour, and it makes that which we call a *Guttural* pronunciation.

Thus out of 4 times 9. *i. e.* 36. caſting out as uſeleſs (or at beſt, inconvenient and needleſs) 9 *Naſo-Spiritals*, 6 *Naſo-Vocals*, and 2 *Spiritals*, there remain, as proper Elements of Language, 19 Conſonants ſuch as are before deſcribed. And if they do not all go in equal and parallel Combinations, you ſee the reaſon of it. And where ſome Nations may be found to have a peculiar *Guttural* or *Naſal* ſmatch in their Language, it will be found alſo, that they labour to retain in their pro-

pronunciation (though perhaps not expreſſed in their Alphabets) ſome of thoſe Letters, whoſe uſe is more generally rejected. And I, not being able to know the diſtinct uſages in all Languages, do not hold my ſelf obliged by the deſign of this Eſſay, to accomodate an Alphabet to them all, but think it ſufficient in this following *Scheme*, to lay down all poſſible Conſonants, that we know of in nature; (not to ſpeak now of one ſtop, whichmay be made in the *Larynx*, of Breath, before it comes to the Tongue and Palat;) leaving it to every ones pleaſure, upon their experience of forrein uſages, to ſelect out of this common ſtock more Letters than I do, and remove the *Obelisks*, which are intended for marks of reject-

rejection of thoſe Letters, to which they are prefixed. I have not in this *Scheme* of theſe 9 Quaternions of Conſonants, Diſtinct known Characters, whereby to expreſs them, but muſt repeat the ſame, preſuppoſing thoſe differences of Pronunciation already deſcribed.

	Articulations	Spirital	Vocal	Naſo-Spirital	Naſo-vocal	
Appulſe, Cloſe.	Labial	P	B	+M'	M	3
	Gingival	T	D	+N	N	3
	Palatick	K	G	+Ng'	Ng	3
Perviouſ.	Labiadental	F	V	+F	+V	2
	Lingua-dental	Th	Dh	+Th	+Dh	2
	Gingival-Sibilant	S	Z	+S	+Z	2
	Palatick-Sibilant	Sh	Zh	+Sh'	+Zh	2
	Gingival-Free	+L'	L	+L'	+L	1
	Gingival-jarring	+R'	R	+R'	+R	1
		7	9	0	3	19

In this minute devious ſubject, I have been neceſſitated to explain my ſelf in more words, than to ſome Few may ſeem needful: For their ſakes therefore, I will in

a

a ſhort review, ſum up what has hitherto been ſaid.

Language is a Connexion of Audible ſignes, the moſt apt and excellent in whole nature for Communication of our Thoughts and Notions by Speaking. *Written Language* is a deſcription of the ſaid Audible Signes, by Signes Viſible. The *Elements* of Language are Letters, *viz.* Simple diſcriminations of Breath or Voice, Articulated by the Organs of Speech.

The *Alphabet* conſiſts of ſo many Letters, as there are to be found ſuch ſimple Diſcriminations. And the *written Alphabet* ought to be juſt ſo many ſingle proper Characters, deſigned to ſignifie the Sound or Power of each Letter. And theſe are the *ſtore-*

houſe

houſe of nature; the Elements, and Materials, out of which all Languages are made. Theſe Letters have their *Material* and their *Formal* cauſes, and *Organs* proper to each. Their *Matter* is various; *viz.* Breath, or voice, *i. e.* Breath vocalized by the operation of the *Larynx*. Their *Form* is conſtituted by the Motions and Figures of the Organs of ſpeech, affecting the Breath or Voice with a peculiar ſound, by which each Letter is diſcriminated.

Now to find out their *juſt number*, firſt find out the different kinds of Matter, of which Letters are made; and theſe are in general, *Breath* when onely Spirit or Breath is Articulated; and *Voice*, when *Articulation* is of Breath vocalized. And theſe again

gain more particularly, are either (after they have paſſed the *Larynx*) onely in the *Mouth*, or elſe have paſſage at the ſame time through the *Noſe*. So there are 4 kinds of matter: *Breath-Oral*; *Voice-Oral*; *Breath Ore-naſal*, and *Voice Ore-naſal.*

Next, examine how many *different Articulations* can be made by ſeveral Motions and Poſtures of the Organs in the parts of the Mouth, which applyed ſeverally to the kinds of Matter, may make ſeveral Diſcriminations of ſound to the Far, *i. e.* ſeveral Letters. And of theſe (as to Conſonants, *viz.* Letters made by Appulſe) I find and have deſcribed 9. And if poſſibly any more may be found out, it is moſt likely, they will not recompence

the Diſcoverers pains, by being of ready and graceful uſe, but will be fitter to be caſt out amongſt thoſe, to which in the preceding Scheme, an *obelisk* is prefixed. Now by theſe 9 Articulations with Appulſe, there will be framed, Conſonants *Spirital* 9; *Vocal* 9; *Naſo-Spirital* 9; *Naſo-Vocal* 9; in all 36. Then rejecting thoſe that prove not graceful, nor eaſie to be pronounced, *viz.* 2 *Spiritals*, 9 *Naſo-Spiritals*, and 6 *Naſo-Vocals*, in all 17; there will remain 19 *Conſonants*, proper for uſe according to the deſign of Letters. And if thoſe, to whom only theſe 19 Conſonants, (or about that number) appeared, and ſtood in ſuch confuſed order, ſome in Ternary's, ſome in Pairs, and ſome ſingle, were them-

themſelves put into ſo much confuſion, and ſo puzled to give a methodical and natural accompt of them, it is no matter of wonder. But now looking upon them, as they lie in their original *Differences* and *Combinations*, and as they are ſelected out of a Natural ſtock of 9 Quaternions, or 4 Novenaries: I think (if I flatter not my ſelf) their Nature and Differences lye moſt plain and obvious to be underſtood.

In deſcribing Letters framed by Articulation, and more particularly, by Appulſe, I have hitherto had no occaſion to ſpeak of H, ſince that H is onely a *Guttural Aſpiration*, *i. e.* a more forcible impulſe of Breath from the Lungs, applyed when we pleaſe, before or after other Letters. And

if we will aſcribe any Articulation by Motion or Figure to it, it is onely a more ſodain and forcible contraction of the Lungs, and collecting the Breath in the Pipe of the *Aſpera Arteria*, and poſſibly ſomewhat ſtreitning it in the mouth of it, which is the *Larynx*; and all the formation of it ends there: and thus applyed to a Vowel, or to ſome of the Conſonants, it does indeed affect them with a different ſound, and therefore deſerves to be conſidered in this place; though not as a Conſonant, having no Appulſe; nor as a Vowel, being never Vocal, but affecting onely the Breath, and that by an addition onely of force, but not by any new Figure in the Mouth; and ſo cannot properly be called a Letter, accord-

according to that deſcription we have made of Letters; yet in that it cauſes a ſenſible, and not incommodious Diſcrimination of Sound, it ought to be annexed to the *Alphabet*, and to be expreſſed in the written Alphabet, by ſome appropriate Character, or elſe (as in the *Greek*) mark of Aſpiration.

The Uſe of it before and after Vowels, is familiarly known; but applyed to Conſonants it needs to be more diligently conſidered, becauſe to ſome of them we find it very unfitly joyned in our Alphabets and Writing; as when we expreſs the powers of F. V. *e. g. &c.* by *Ph*, *Bh*, *Th*, *Dh*, in which Letters there is not any ſuch *Guttural* Aſpiration as H, nor any proper ſound of it, neither

any mixture of the Natural ſounds of P. B. T. or D. But the other are Genuine ſimple Letters formed, by different Figures of the Organs, from thoſe of theſe laſt, and ought to be altogether expreſſed by ſingle proper Characters. The miſtake, I gueſs, lies in this, that *Ph* and thoſe other, being made by *Pervious* Appulſe, there is ſome paſſage of Breath through the Mouth, which by addition of H, (through prejudice taken in with our firſt A B C,) is thought to difference them from P, and thoſe other Cloſe Letters of near reſemblance. But if better examined, there will be found another difference beſides that of Perviouſneſs of Appulſe, or paſſage of Breath; and that conſiſts in the *Figure* of their

their *Articulation*; P. and B. are *Labial*: *Ph* and *Bh*, (or F and V.) are *Labio-dental*; T. and D. are *Gingival*; *Th.* and *Dh.* are *Lingua-dental.* And for their being *Pervious*, you may call them (if you pleaſe,) *Perſpirate*; but yet they are not *Aſpirate. i. e.* with ſuch an Aſpiration as H. Nor can you well joyn H. either before or after any of the 6 Oral *Occluſe* Conſonants, without an *Hiatus*, if you retein the true figure of thoſe Letters. As for *Sh*, which alſo is an Original ſimple Letter, becauſe our Alphabet wanted a more proper character for it, and the figure of it gives a rounder paſſage of Breath than S, (*this* hiſſing in the Goums; *that*, in a larger ſpace, in the Palat,) it was unaptly ſup-

plyed by adding H; and the ſame is *Zh* to Z: *Gh.* (as in *Through*) is onely an *Aſpirate*, and G. ought to be left out. And *Ch* (as we pronounce it) is a compound of T. and *Sh.* or at leaſt T. and Y. As alſo J Conſonant with us, or G ſemblably pronounced, is compounded of *D* and *Zh*, or D and Y. In WHAT, WHICH, and the like, H is pronounced before W. and ſo of right ought to be written.

Beſides the 9 ſeveral Articulations by Appulſe before deſcribed, I hinted and paſſed by one, of which yet ſomething may be ſaid, *viz.* the Stop made by cloſing the *Larynx*; though I thought it not worthy to be inſerted amongſt the Letters, in that it is applyed to Breath immediately as it

it paſſeth through the *Aſpera Arteria*, and not to Breath or Voice *Oral* or *Naſal*, being ſtopt before it arrives there, or at the Tong; and, being a ſtop of that Inſtrument of Vocal Sound, the *Larynx* cannot be vocalized: ſo that, if it ſhould paſs for an Articulation, it could frame but one Letter, and that uneaſie and unready to be joyn'd with the motions of other Letters in Speech. It is of ſome Affinity to K, of a middle nature between K. and H. And this being relaxed may make by a *Pervious* Appulſe there, a ſhaking of the *Larynx*, as when we Gargarize: like as ſnorting inwards doth by ſhaking the *Uvula*, and as may be done with the Lips. And this coming ſtill nearer to an Aſpiration, a

Touch

Touch of it may perhaps be an Ingredient in the rough Guttural pronunciation of the *Welch* and *Iriſh*: And I have heard ſome *Criticks* pronounce the *Greek* χ after that manner, but ſomewhat ſofter, and our *gh* (as in *Through*) has ſomething of it, being more than a bare Aſpiration, if ſtrongly pronounced; and the deſcribing it by a Compoſition of *g* and *h* ſhews, that our Anceſtors had that Notion of it, as a middle ſound between G and H, though G was properly put inſtead of K; for it can have nothing of *Vocal* ſound; Voice being raiſed by ſtiffe tenſion of the *Larynx*, and on the contrary this ſound by a relaxed poſture of the Muſcles thereof.

There are other differences of ſound

Sound in Speaking, by which the Tone of ſeveral Nations, and oft of ſeveral perſons in the ſame Nation, is rendred diſtinct, which are partly to be referred to their *Alphabets*, and partly to their *Words* and *manner of Pronunciation*, and *Accent*. As to their *Alphabets*, ſome may be found to take in ſome Letters, as the *Ore-ſpirital* L' R' and *Naſo-ſpirital* M' N' Ng; which others uſe not, and which (as hath been obſerved) give a *Gutturall* and *Naſal* ſmatch to their ſpeaking. And in ſeveral Languages, ſundry of the more graceful Letters in the natural Alphabet, are wholly omitted and diſuſed. Again ſome being unapt to pronounce ſome Letters even in their own Language, get a different Tone in ſpeaking. They who

who have great and long Tongs, cannot ſo well make that *Pervious* Appulſe of the Tongue to the Goums, which S. requires; but are apt to touch their Teeth, and pronounce *Th* inſtead of S, which is called Lisping. On the contrary they, who have ſhort Tongs, or are Tongue-tyed, are apt to fall ſhort of the Appulſe of the Tongue to the Teeth, and oftner place it on the Goums, and ſay T. and D. inſtead of *Th* and *Dh*, as *Moder* for *Mother*.

They whoſe P*alat* is ill formed, (ſuch as are ſaid to want the Roof or Palat of the Mouth) or the *Muſcles* of their Tongue are weak and Flaccid, cannot pronounce R. The former for want of fit ſurface of the Palat to conduct the Breath even and ſtrong to the Goums;

Goums; the later, for want of ſtrength of the Tongue to ſuſtain the jarre.

As to their *Words*, a great difference in the Sound of ſeveral Languages ariſeth from the ſorting of Letters, whereof the Words are framed: ſome affecting one ſort of Letters, ſome another, to be the moſt frequent Ingredients in their Words. Some Languages are full of Conſonants, as the *Polasque*: ſome, as the *Italian* and *French*, avoid them: though the *French* write ſome Conſonants, which they do not pronounce, to be *Indices* of the Derivations of their words: and generally more Emphaſis and Accent is given to the vowels by our neighboring Nations, than by us *Engliſh*.

I have obſerved a pretty affecta-

ation

tion in the *Alleman* and ſome others, which gives their Speech a different Tang from ours: to ſoften the *Occluſe Gingival* Conſonants, by a kind of Mixture or ſoft addition of a *Spirital* in the ſame Articulation, to a *Vocal* producing the Vowel, and making the Conſonant end *Spirital*, which began *Vocal*, as D T. N N. *Stâdt*, *Bâdt*, *Mânn*, *&c.* And whilſt the *Italians* ſtrive, as it were, to cut a thread in their Pronunciation between D and T, ſo to ſweeten it; the *Florentine* comes nearer to T, the *Venetian* to D. And generally, they make the *Occluſe* Appulſe, eſpecially the *Gingival*, ſofter than we do, giving a little of perviouſneſs.

Many more Obſervations of theſe kinds might eaſily be made, and

and are to be found in different Languages, all over the habitable world. And in general, the Freedom or Apertneſs and vigour of pronuncing (as is particularly obſerved in the *Bocca Romana*) and giving ſomewhat more of Aſpiration; And on the other ſide, the *cloſeneſs* and Mufling, and (as I may ſay) Lazineſs of ſpeaking (which varieties are found in ſeveral Nations comparatively, and by the different natural ſhapes of the Mouth, and ſeveral conformations of the Organs of ſpeech in thoſe of the ſame Language) render the ſound of their Speech conſiderably different, though they all ſhould uſe the ſame Alphabet.

I come now to conſider Letters made *without Appulſe*, i. e. *Vowels*, among

among which will be found two or three more to be added to the before deſcribed number of *Conſonants.*

The *Vowels* are made by a free paſſage of *Breath Vocalized* through the cavity of the Mouth, without any appulſe of the Organs; the ſaid cavity's being differently ſhaped by the poſtures of the Throat, Tongue and Lips, ſome or more of them, but chiefly of the Tongue.

As to the *Number* of Vowels, they, being differenced by the ſhape of the cavity of the mouth, may be reckon'd very many, if ſmall differences be allowed. But thoſe which are remarkably diſtinguiſhed, and reaſonably ſuffice to expreſs the pronunciations in uſe, that we know of, may be redu-

reduced to theſe Eight; ɑ. a.e.i.o. oo. u. ɤ; the ſounds whereof, according to the vulgar pronunciation, are thus.

Long, or accented in the *Vowel.*	ɑ	ā	ē	ī	ō	o͞o	ū	ɤ
	Fall.	*Fate.*	*Seal.*	*Eel.*	*Gole.*	*Fool.*	*Rule.*	*Two.*
Short, or accented in the *Conſonant.*	*Folly.*	*Fat.*	*Sell.*	*Ill.*	*Full.*			

There is ſo much ſpace between *a* and *e*, that there may be a vowel inſerted between them, and a fit character for it may be æ, and perhaps ſome Languages may have a diſtinct uſe of ſuch a vowel.

Whereas I make the *Material* part of Vowels in their *Definition* to be Breath vocalized, or voice Oral, I am to be underſtood, as I treat of Vocal Speech; otherwiſe the ſame Vowels may be *whiſpered* that is, in uſe of whiſpering by Articulations of Breath; and, if

there were any uſe of it, they may be pronounced *Naſal*, both *Spirital* and *Vocal*; but in Vocal Speech they are all *Ore-vocals*, as to common and ready uſe, and are to be accompted juſt ſo many, as there are ſeveral Articulations, by which they are made.

The *Articulations*, that is, the Motions and Poſtures of the Organs in framing the Vowels, are more difficultly diſcerned, than thoſe of the Conſonants; becauſe in the Conſonants, the Appulſe is more manifeſt to the ſenſe of Touching, but in the Vowels it is ſo hard to diſcern the Figures made by the Motions of the Tongue, (inclining onely toward the Palat, and not touching it) eſpecially about the more inward Boſſe or convex of it, that it is rendred

dred no leſs difficult to define the Articulations of the Vowels; and he that can deſcribe them accurately, *erit mihi magnus Apollo.*

Onely he who ſhall adventure, has this advantage, that it is eaſier to affirm, than to diſprove. Neither are we obliged to ſeek, nor can expect to find any exact method of nature in the Articulations of Vowels, (as e. g. to find them equally ſorted into *Gutturals*, *Palatick*, or *Gingivals*, and *Labials*) no more than were found in thoſe of the Conſonants; where, of 9 Articulations, there are *Labial* 1; *Labiodental* 1; *Linguadental* 1; *Gingival* 4; *Palatic* 2; and ſome of theſe irregularly differing from the reſt. I ſhall therefore take upon me no more, than to ſet down, what I think may be per-

ceived in examining thoſe Articulations.

But firſt, to diſcover how much the middle and inward Boſſe of the upper ſurface of the Tongue is uſed here, and how little the end of it (except onely to conduct and give way,) you will upon tryal find your ſelf able to pronounce all the Vowels, holding the end of your Tong, all the while ſteady againſt your Teeth. And you may come very near, doing the ſame without altering the poſture of your Lips: which evinceth, that all vowels are formed by the Tong, though in ſome the Lips concurre, and in ſome, the Throat. And whilſt you make this tryal, the Motions of the Tongue by Contraction, Dilatation, *&c.* are ſo eaſie and ſo

ſo ſubtil, that you can hardly conceive or diſtinguiſh them aright.

But we may imagine the Vowel (ɑ) to be made by the freeſt and openeſt paſſage of the Throat through the Mouth, and ſo to have a kind of natural Articulation without Art, onely by opening the Mouth: (*a*) to be a little ſtreitned by the Boſſe of the Tongue near the Throat; and therefore if you try to paſs from (ɑ) to (*a*) you will find that you thruſt the end of your Tong ſomething forward to raiſe the Boſs of the Tong towards the Palat to ſtreiten the paſſage.

In (*e*) the middle of the Palat is ſtreitned, by the breadth of the Tong, and therefore the end of the Tong carried yet forwarder.

And in (*i*) ſtill more after the ſame manner, but with a ſtronger and firmer Tenſion of the Muſcles of the Tong bearing it ſtiſly very near the Palat, and reſting the ſides of the Tong againſt the ſide-Teeth.

In (*o*) the *Larynx* is depreſſed, or rather drawn back by contraction of the *Aſpera Arteria*. And the Tong likewiſe is drawn back and Curved; and the Throat more open to make a round paſſage: and though the Lips be not of neceſſity, yet the drawing them a little rounder, helps to accompliſh the pronunciation of it, which is not enough to denominate it a *Labial* Vowel, becauſe it receives not its Articulation from the Lips. (oo) ſeems to be made by a like poſture of the Tong

Tong and Throat with (*o*) but the *Larynx* ſomewhat more depreſſed. And if the Lips at the ſame time be contracted, and born ſtifly near together, then is made *ȣ*. (*u*) with the Tong in the poſture of (*i*) but not ſo ſtiffe, and the Lip born near the upper Lip by a ſtrong Tenſion of the Muſcles, and bearing upon it at either corner of the mouth.

Thus, it ſeems, in *oo* and (*o*) the Throat; in (*ɑ*) the Mouth is more opened: in *a. e. i.* the ſtreitnings of the cavity of the mouth between the Tong and Palat, are gradually both forwarder and nearer the Roof.

(*ȣ*) is made by the Throat, and Tong, and Lip. (*u*) by the Tong and Lip; in *ȣ* the Tong being in the poſture, which makes

(*oo* ;) and in (*u*) in the ſame poſture, which makes (*i.*) And in this, *ʉ* and *u* are peculiar, that they are framed by a double motion of Organs, that of the Lip, added to that of the Tong; and yet either of them is a ſingle Letter, and not two, becauſe the motions are at the ſame time, and not ſucceſſive, as are *eu. pla. &c.* Yet for this reaſon they ſeem not to be abſolutely ſo ſimple Vowels as the reſt, becauſe the voice paſſeth ſucceſſively from the Throat to the Lips in *ʉ*, and from the Palat to the Lips in *u*, being there firſt moulded into the figures of *oo* and *i*, before it be fully Articulated by the Lips. And yet, either theſe two, *ʉ* and *u*, are to be admitted for ſingle Vowels, or elſe we muſt exclude the Lips from being

being the Organs of any ſingle Vowel ſince that the Mouth being neceſſary to conduct the Voice to the Lips, will, according to the ſhape of its cavity, neceſſarily give the Voice ſome particular affection of ſound in its paſſage, before it come to the Lips; which will ſeem to make ſome ſuch compoſition in any Vowel which is *Labial.* I have been inclin'd to think, there is no *Labial* Vowel, but that the ſame affection from the Lips may, ſomewhat in the nature of a Conſonant, be added to every of the Vowels, but moſt ſubtlely, and aptly to two of them, whoſe Figures are in the extreams in reſpect of Aperture and Situation, one being the cloſeſt and forwardeſt, which is *i*, and the other being moſt open and back-

backward; there being reaſon to allow a Vowel of like ſound in the Throat with ʊ, but diſtinct from it as not being *Labial*; which will be more familiar to our Eye if it be written *oo*; as in *Cut*, *Coot*, *Full*, *Fool*, *Tut*, *Toot*, in which the Lip does not concur; and this is that other. Thus *u* will be onely *i Labial*, and ʊ will be *oo Labial*, that is, by adding that motion of the under-Lip, *i* will become *u*, and *oo* will become ʊ; and then the Series of the Vowels according to their degrees of aperture, and receſs towards the *Larynx*, will be thus, *i*, *e*, *æ*, *a*, *ɑ*, *o*, *oo*; to which may be added *u* and ʊ, becauſe of their general uſe, as being Labially affected more ſubtlely than the reſt.

Taking theſe then for *Vowels*, it is

is next obſervable, that *i. u.* ꝟ. have another peculiar property above the other Vowels, being made by a ſtrong Tenſion and firme poſture of the Organ; the firſt, of the Tongue, the two later, of the Lip, making almoſt an Appulſe, that by reaſon thereof they ſerve indifferently for *Vowels* in reſpect of the *Aperture*, and for *Conſonants* in reſpect of the *pene-appulſe*, and ſo much the more verging either way, by the liberty of managing the Organs, according to the reſpective Occaſions.

And it is here obſervable, how excellently Nature has provided for the *Readineſs* and *Eaſineſs* of Speech. For if Speech were to be made onely by *Vowels*, there would be an *hiatus*; we could not ſpeak diſtinct enough, and the Breath

Breath would ſpend too faſt; therefore it is checked by the Appulſes made in Conſonants; and if it ſhould be all Conſonants, the Voice would be too much abated, and the paſſage would not be eaſie from one Syllable or collection of Letters to another; but being both mixed together, one Vowel in every Syllable, for varieties ſake, ſometimes preceding, ſometimes following, and ſometimes interpoſed between the Conſonants (by checking and reſerving the Breath, and letting it paſs with a quick impulſe at the Aperture of the Organs for the Vowel) give a vigor and emphaſis to the Sound: And the motions of the Organs become more facile and ready by the mixture of *Apertures* with *Appulſes*.

But

But in these three Vowels, of which I am now treating, there seems to be a kind of *Lusus Naturæ*; these are of a middle constitution between Vowels and Consonants, partaking of both: and we see, how many disputes, their simple and ambiguous nature hath created among the *Grammarians*, and how it has begot the mistake concerning *Diphthongs*; they being all, that are accompted properly such, compounded either with *i. u.* or *y*, and are, as I conceive, *Syllables* and not *Diphthongs* (as it is intended to be signified by that word:) *i. y.* and *u.* then supplying the place and nature of Consonants by streitning the passage of Breath, so as to check it not much less, than is done by some of the *Pervious* Conso-

Conſonants, and by making a ſmart ſtroke at the Aperture in paſſage to another Vowel, anſwerable to the Colliſion, or rather Divulſion of the Organs made by other Conſonants, as is evident in pronouncing *ia*, *ɣa. id eſt ya. wa.* For the ſame reaſon, of the improper *Diphthongs* the moſt paſſable are thoſe compounded with *e* or *o*, as *ea*, *oa*, becauſe of the nearneſs, that *o* has to *ɣ*, and *e to i*, and having either of them a little of that Spring in the Muſcles, which I have laſt deſcribed.

Vid. Append.

Concerning *ɣ* and *u*, this may be obſerved, that in ſubjoyning them to another vowel, *ɣ* is apter to follow *a* and *o*, becauſe of their reſemblance in the poſture of the Tong, as hath been ſaid; and for the like reaſon *u* is apter to follow

low *a* and *e*, as *ȣaȣl*, *wawl*. *euge*, &c. But generally if the Vowels follow, then it is *ȣ* precedes, and not *u*.

Our vulgar (*i.*) as in (*ſtile*) ſeems to be ſuch a *Dipthong* (or rather ſyllable or part of a ſyllable) compoſed of *a. i.* or *e. i.* and not a ſimple Original Vowel.

I may now give you a Scheme of the whole Alphabet.

Letters, *i. e.* ſuch ſimple Diſcriminations of Sound as may be Elements of Signes for communication by *Speech*, are differenced by

- *Matter* of Sound, prepared by the Lungs, Larynx, Mouth, Noſe.
  - Breath
    - Oral — Ore-ſpirital.
    - Ore-Naſal. — Naſo-ſpirital.
  - Voice.
    - Oral — Ore-vocal.
    - Ore-Naſal. — Naſo-vocal.
  - (and may be ſtiled)
- *Forme*, Articulation by
  - *Appulſe* of one Organ to another, *Conſonants* by degree
    - Plenary Cloſe
      - Lip to Lip. Labial, as — B.
      - Tong to Gums. Gingival, — D.
      - Tong to Palat, Palatic, — G.
    - Partial Pervious
      - Lip to Teeth. Labiodental — V.
      - Tong to Teeth, Lingua-dental — Dh.
      - Tong to Gums, Gingival
        - Sibilant. — Z.
        - Jarring. — R.
        - Lateral. — L.
      - Tong to Palat, Palatic, Zh. or — J.
  - Inclination of one Organ to another without Appulſe.
  - *Vowels*—*a*. *a*. *x*. *e*. *i*. *o*. *oo*. *u*. *ȣ*.

Thus there are 9 Articulations with Appulſe, which applied ſeverally to four ſorts of matter, *viz. Breath-Oral, Breath Ore-naſal, Voice-Oral, Voice-Ore-naſal*, may make 36 Conſonants; whereof I have inſtanced in one to each Articulation, having before deſcribed other three to each Articulation. And likewiſe nine Articulations without Appulſe ſo applied, may make 39 vowels.

Of these ſome are

Commodious
- Conſonants
  - Ore-ſpirital, 7. p. t. k. f. th. s. sh.
  - Ore-vocal, 9. b. d. g. v. dh. z. zh. l. r.
  - Naſo-vocal, 3. M. N. Ng.
- Vowels, Orevocal —— 9. *a.* a. æ. e. i. o. oo. u. *e.*

Uneaſie and unpleaſant, or not ſufficiently diſtinct.
- Conſonants
  - Ore-ſpirital 2. L' R'
  - Naſo-ſpirital 9.
  - Naſo-vocal 6.
- Vowels
  - Ore-ſpirital 9.
  - Naſo-ſpirital 9.
  - Naſo-vocal 9.

  viz. in vocal ſpeech, (of which I am treating) but in whiſpering they are commodious.
- Of intermediare Figures without determinate number.

The Vowels, in reſpect of their Articulations, may ſeem not unfitly to be ſorted into
- Guttural —— oo. o. *a.*
- Palatic —— a. æ. e. i.
- Labio-Guttural —— *e.*
- Labio-Palatic —— u.

There are ſome other Accidents beſides thoſe ſpoken of before, which have an Influence in varying the Sound of Languages, as *Accent* and *Emphaſis*; which though now much confounded, ſeem to have been formerly more diſtin-

diſtinguiſhed. *Accent*, as in the *Greek* names and uſage, ſeems to have regarded the Tune of the voice; the *Acute* accent raiſing the Voice in ſome certain Syllables, to a higher, *i. e.* more acute Pitch or Tone, and the *Grave* depreſſing it lower, and both having ſome *Emphaſis*, *i. e.* more vigorous pronunciation. The *Circumflex* keeps the voice in a middle Tune, and therefore in the *Latine* is compounded of both the other, but withal adding an *Emphaſis* and longer ſtay upon that Syllable, expreſſed in *Greek* by a ſuitable character [~] And therefore the Syllable, which is circumflexed, is always accompted long. This *Tuning* of the Voice by *Accent*, is of great concern to the *gracefulneſs* of pronunciation.

And although our Languages have not ſuch accurate Rules for it as the *Greek* had, yet it is much conſidered, and ſubmitted to the judgement of more Critical Ears, to direct and determine what is graceful, and what is not; and here ariſes a difference in the Sound of Languages, by the different Uſe of Accent. For example, the *French* and *Greek* run contrary one to the other: Whereas the *Greek* in the end of a word changeth the *Acute* accent to a *Grave*, and moſt Languages have ſomewhat like (which is therefore called *Cadence* of their voice;) the *French* conclude with an *acute* Accent, raiſing the Tune of their Voice in the *laſt* Syllable.

Emphaſis is of a larger conſideration and extent, and not ſo much regards

regards the Tune (leaving that to Accent) as a certain *Grandeur*, whereby ſome Letter, Syllable, Word, or Sentence is rendred more remarkable than the reſt, by a more vigorous pronunciation, and a longer ſtay upon it: As, in a *Speech* ſome Sentences are made more remarkable, in a *Sentence* ſome one or two words; in a *Word*, ſome one Syllable; and in a *Syllable*, ſome one Letter. And of theſe *Two* laſt I am chiefly here concerned to take notice.

In a *Poly-ſyllable* word, it is firſt to be conſidered, to which Syllable the *Emphaſis* is to be given, and in each Syllable, to which Letter the former of theſe is uſually confounded with Accent; but in the later lies the greateſt difference of Pronunciation, the

Conſonants coming in for a ſhare of *Emphaſis*, and making a Syllable long, where the Vowel is ſhort: E. g. *Altera*, in reſpect of the whole word, the *Emphaſis* and *Accent* lies in the firſt Syllable, but then that Syllable is again capable of a two-fold *Emphaſis*, *viz.* either in the Vowel or in the Conſonant. Moſt Foreigners pronounce their Vowels ſoft, as this they pronounce *Aaltera*, or *Aultera*, ſtaying upon the Vowel, and making a ſoft gentle Appulſe in the Conſonant; *We* are apt to pronounce it *Altera*, making the Vowel ſhort and giving the *Emphaſis* to the Conſonant. And this kind of *Emphaſis*, *viz.* of the Conſonant, is apt to gain too much place in our Speech, and I take it to be a general vicious habit in our pronun-

pronunciation, as they, who learn to ſing, will find; for their firſt attempt muſt be, to unlearn that habit. So alſo We ſay *Forma*, they, *Fôrma*, or (as we would write it, if it were *Engliſh*) *Foreena*. We ſay, *Mortem*; they *Moretem* or *Moortem*. We ſay, *Conſonant*, they *Cônſonánt*, or, *Coneſonaunt*. We ſay, *Catt*, they, *Caut*. Yet ſomething may be ſaid on our behalf, that giving an Emphatical Sound to the Conſonants, makes our Pronunciation more diſtinct, and certain to the Ear. And here it may be proper to aſſert, that there is no ſuch thing in nature as a *double Letter*, either Conſonant or Vowel, in one and the ſame Syllable, and it is incongruous, to write them ſo. For whereas every Letter written ſhould

have one and but one determinate ſignification, to expreſs the power of ſome one certain Sound made by the Mouth; with more than *Poetical* Licence one ſigne is ſet for another, and the ſame Letters in the ſame Alphabet in ſeveral words, are made to have ſeveral powers. Thus in our *Engliſh*, *ee*, and *ie*, and *e*, for *i*, (as *Feel*, *Field*, *Engliſh*:) oo for *ʊ*, *&c.* And frequently the *Emphaſis* is incongruouſly ſupplied by adding quieſcent Letters (the Phraſe confeſſing the abſurdity) as *Bate Batt*, *Baſe Baſſe*, *Bare Barre*. But I do not intend to purſue the many *Pſeudography's* in uſe, which are too numerous; but to ſhew of how great concern the Emphaſis were, if rightly uſed; and how moſt of thoſe *Anoma-*

lies

lies in writing might be avoided, and better ſupply'd by noting our Words or Syllables, that need it, with ſome mark of *Emphaſis*. This will ſhew, when a Vowel is to be pronounced long or ſhort, and cut off ſuperfluous Quieſcent Letters, and double Conſonants: for, when there is a double Conſonant written, though ſometimes it changeth the Vowel, *Ale*, *All*, *Cale*, *Call*; yet generally it ſerves to transfer the *Emphaſis* from the Vowel to the Conſonant.

This kind of *Emphaſis* then, I mean not the Emphaſis of a Syllable in reference to a word, but the Emphaſis of a Letter in reſpect of Syllables, as it is to belong either to the Vowel, or to the later Conſonant (if there be any) in the ſame ſyllable, if it were better heed-

heeded, and noted by ſome mark, would conduce much to *Orthography*; as for example, if an Accent were placed over the Vowel, or elſe over the Conſonant, as the caſe requires, *ál*, *aĺ*; or rather, leaving the Accent to mark out the Syllable in a word, to which *Emphaſis* is due, where need is; make uſe of long and ſhort Characters ſet over the Vowel, and to make the leaſt work, ſuppoſe every Vowel to be long, which is not marked, and mark onely thoſe Vowels, which are to be pronounced ſhort, and the *Emphaſis* tranſferred to the following Conſonant. Thus inſtead of *Ball Boll*, *Bale*, *Ballad*; *Beal*, *Bell*; *Biele*, or *Beel*, *Bil*; write *Bal*, *Bă̆l*; *Bal*, *Bă̆lad*; *Bel*, *Bĕ̆l*; *Bil*, *Bĭ̆l*: I ſay, if our pronunciation were written in proper

proper Letters, and with marks of *Emphaſis*, it would reſtore *Orthography*, and cut off many ſuperfluous Letters that are written, not to be pronounced, but onely to make an incongruous ſupply of *Emphaſis*, or to alter the power of ſome other Letters in the ſame word; whereof in ſome Languages ſo many examples are found, that it would be tedious to recount them. In the mean time we are apt very unjuſtly to laugh at the uncouth Spelling in the writings of unlearned perſons, who writing as they pleaſe, that is, uſing ſuch Letters, as juſtly expreſs the power or Sound of their Speech; yet, forſooth, we ſay write not *true Engliſh*, or *true French*, &c. Whereas the *Grammarians* themſelves, ought rather to

to be blamed, and derided for accommodating Words ſo ill with Letters, and Letters with ſo faulty *Alphabets*, that it requires almoſt as much pains to learn how to pronounce what is written, and to write what is ſpoken, as would ſerve to learn the Language it ſelf, if Characters or Signs written were exactly accommodated to Speech. But, though it be true, that this ſo needleſs and unprofitable incumbrance of Learning might wholly be removed by rectified Alphabets, and ſetling a juſt correſpondence between the Signs *Audible*, and the Signs *Viſible*, if ſuch *Alphabets* and a regular uſage of them could take place; yet it is not to be hoped or imagined, that the incongruous Alphabets, and Abuſes of writing

writing can ever be juſtled out of their Poſſeſſion of all Libraries and Books, and univerſal habit and practice of Mankind. This were to imply, that all Books in being ſhould be deſtroyed and aboliſhed, being firſt new Printed after ſuch rectified Alphabets; and that all the Age ſhould be prevailed with, to take new pains to unlearn thoſe habits, which have coſt them ſo much labour. Neither did any ſuch Hopes or Ambition ſet my thoughts on work, but *partly* the worthineſs and curioſity of this Subject in it ſelf, and *chiefly* the great uſe of an accurate knowledge of the Nature of Letters and Speech, in directing to a ſteady and effectual way of *Inſtructing Deaf* and *Dumb perſons*, to obtain a reaſonable perfection of

of utterance of Speech; and to diſcern (in ſome meaſure) with their Eye, by obſerving the motions of their Mouth, what others ſpeak. And to that end I have added to this Eſſay an *Appendix*, relating that deſigne; both which I hope and promiſe my ſelf, will find a Candid reception from thoſe, who ſhall conſider theſe poor and ſlight Papers, as a work of Charity and Compaſſion; and may be acceptable to them, as it is pleaſing to my ſelf, to have ſtudied ſome relief for the Calamitous and Deplorable Condition of perſons Deaf and Dumb.

APPEN-

APPENDIX

Concerning Perſons

DEAF AND DUMB.

AMongſt *Dumb* Perſons, there are very few, who are ſuch through defect in the Organs of Speech; but moſt commonly that Imperfection is the effect, or rather conſequence of *want* of *Hearing*, by ſome diſorder or defect in the Organs appertaining to that Senſe. The Organs of *Speech*

Speech are many and large, and managed by ſo great a number of Muſcles, that Speech is not eaſily deſtroy'd, though often ſomewhat vitiated, as to ſome particular Letters, and as to ready pronunciation in general; but they, who have ſuch Imperfections, are not thereby utterly deprived of the *Uſe* of Speech: whereas the *Organs* of *Hearing* are few and ſmall, and a little diſorder or defect wholy overthrows the uſe of that Sence. There are three very little Bones in the Ear, upon whoſe right conſtitution, depends the due Tenſion of the *Tympanum*; and if the action of one little Muſcle, which ſerves to draw one of theſe *Officles*, fixt to the *Tympanum*, be loſt or abated, the *tenſion* of that Membrane ceaſing,

Sound

Sound is hindred from coming into the Ear: And I am of opinion, that the moſt frequent *cauſe* of *Deafneſs* is to be attributed to the Laxneſs of the *Tympanum*, when it has loſt its Brace or Tenſion by ſome irregularity in the Figure of thoſe Bones, or defect in that Muſcle: Some inſtance whereof, I have formerly given in a Paper preſented to the *Royal Society*, * whereby Sound is, as it were, ſhut out of doors by the intervention of that Laxe Membrane, and not ſuffer'd to paſs into the inward Ear, and arrive at the *Auditory Nerve*: Like as the Voice is ſometimes intercluded by a hoarſneſs, or viſcous phlegme, cleaving to the *Aſpera Arteria*, *Larynx* and *Uvula*; ſo that, allhough there be no fault in the Organs of

* See the end of this Diſcourſe.

Articulation, yet there is no voice to be Articulated.

Now as to the moſt general caſe of thoſe who are *Deaf* and *Dumb*; I ſay, they are *Dumb* by *conſequence* from their Deafneſs, onely becauſe they are not taught to ſpeak. The *Natural part of Speech*, *viz.* Words made of Letters, by ſuch exquiſite various Articulations, is learnt by much practiſe and imitation. And much more the *Artificial* part, *viz.* Inſtitution of Significancy of Language, cannot be acquired without great help of Inſtruction. And to that end the Tong and the Ear, Speaking and Hearing, hold a correſpondence, by which we learn to imitate the Sound of Speech, and underſtand the meaning of it. But he that never *hears* a word ſpoken, nor can

can be told what it ſignifies, it is no wonder if ſuch an one remain ſpeechleſs: as out of queſtion any one muſt do (though of integral principles) who from an Infant ſhould be bred up amongſt *Mutes*, and have no teaching. Such then is the caſe in hand, that they who want that *Sence* of *Diſcipline* (*Hearing*) are alſo by conſequence deprived of Speech, not by any immediate *Organical Indiſpoſition*, but for *want of Diſcipline.*

Finding then a Perſon in this condition, not capable of Hearing; if we would endeavour to make uſe of the Organs of Speech (ſuppoſed to be of ſufficient conſtitution) there is no way, but to have recourſe to the other Learned Senſe, which is *Seeing*; and

to find out ſome means (though farther about and more laborious) of inſtructing him by his Eyes, and ſhewing him the viſible motions and figures of the Mouth, by which Speech is Articulated. And to apply the Doctrine of Letters to this uſe and purpoſe, is the Deſign of this *Appendix*. Where our firſt buſineſs had need be, to Animate the *Undertaker*, and conſider, *whether* it be poſſible or no: For it muſt be confeſſed, that there lie in the way great Objections and Difficulties, which ſeem to diſcourage, and portend ſuch a deſign unfeſible. But I doubt not to ſhew you, how to overcome thoſe ſeeming demonſtrable Impoſſibilities, and ſhew, how truly it is ſaid, *Venit miſeris ſolertia rebus.*

The

The *First* difficulty which occurs, is, that it will be painful and irkſome to a deaf Perſon to *exerciſe* his Voice, as even thoſe, who have no defect, are apt to be tired and ſpent with much ſpeaking, and find a hoarſneſs in their Voice, and wearineſs in the Lungs and Muſcles of the *Larynx*; and it will be very hard to prevail with him to ſubmit himſelf to ſo troubleſome a courſe of Learning, being Deaf to all perſwaſions and arguments, by which we might excite him to it. I confeſs, this *Objection* ſtands upon the threſhold, as a great diſcouragement. And except a great regard be had to it, who ever goes about this deſigne, will attempt it in vain, eſpecially in the firſt progreſs in it. Therefore the

Deaf Perſon muſt be gently and diſcreetly treated, and by all kind of pleaſant uſage wrought upon, to take ſome pains at it; watching your ſeaſons, and taking great care, that he may not hate his task, but do it cheerfully. He muſt be allured by much ſweetneſs, and encouraged, as oft as you have the leaſt occaſion, by applauſe and admiration; and muſt exerciſe *often*, and a *little* at a *time*, ſo as not to vex and weary him; and in ſome time, habit and cuſtom, and the pleaſure he will take in it, will make it eaſier to him.

2. Some of the Conſonants, and moſt of the Vowels, being Articulated by ſo *obſcure Motions* and *Figures*, that the moſt Learned can hardly agree to deſcribe them, it may well be doubted how they

they can be deſcribed to the Eye of Deaf Perſons. And further, if all the 9 Articulations of the 19 Conſonants were underſtood and imitated by him; yet how can he diſcern the *Material Differences*, which make up the number of Conſonants, and conſiſt onely in Sound, and cannot be repreſented to the Eye.

The *former* part of this objected difficulty is eaſily anſwered by ſaying, that in Aſcents, every ſtep gained is a footing and help to the next: and in the Elements of *Geometry*, the Definitions, and Axioms, and Poſtulata, and eaſier propoſitions, ſerve to elucidate, and demonſtrate harder *Theorems* and *Problems*. Thus you will find, that when you have conducted him through the plainer

part of the *Alphabet*, he will begin ſo far to underſtand his task, that more imperfect deſcriptions will ſerve to carry him on to the end of it.

As to the ſecond part of this objection, it muſt be confeſſed a thing not feſible to repreſent the *Material Difference* of Conſonants to the Eye; *S*ound being onely the object of Hearing: Yet the *Naſal* Differences may be pointed at; but thoſe *Seven pairs*, before diſcourſed of, cannot be diſtinguiſhed by *Sight*. And in this caſe it is chiefly that I ſaid, the deſigne muſt be compaſſed by a way further about; and ſuch a way I ſhall direct in its proper place, which ſhall eaſily and certainly effect it.

3. *S*uppoſing a Deaf perſon to have

have gained a perfect pronunciation of all Letters and Words, and that all the Articulations were to be diſcerned by his Eye, in the Mouth of one who ſpeaks to him; yet this, as to Conſonants, could diſcover but 9 differences, and muſt leave 10 Letters and indeed all undiſtinguiſhed: ſo that it is impoſſible to diſcern certainly what Letter is pronounced. And then it muſt likewiſe ſeem impoſſible (what is ſo frequently ſpoken of and atteſted) for a Deaf Perſon, by obſerving the Motions of another mans Mouth, to know what he ſays, and to uphold a current communication of diſcourſe with him.

This *objection* ſeems unanſwerable, and the difficulty not to be conquered; and it muſt be granted

ed, that it is impoſſible to know *infallibly* by the Eye, what another ſpeaks. But yet there is an equity and relief in this Caſe, as I ſhall make appear in caſes not much different. As Firſt, Any *Equivocal* word ſpoken *alone*, cannot be determined to any one certain *S*enſe and *S*ignification by him that hears it; of which there are numerous examples in every Language: Yet the ſame word in *Connexion* of *S*peech, as part of a ſentence, is underſtood as eaſily as any other; ex. gr. *But*: if I ask you, what I mean by that word, you will anſwer, I may mean this or that thing, or ſomething elſe, you cannot tell which: you can diſtinguiſh, but you muſt leave me to determine; but if I joyn it with other words in Conſtruction

ſtruction and *S*enſe, as (*But* I will not. (a *But* of *Wine.*) *But* and *Boundary*) the Ramme will *But*) (*Shoot at a But*); the meaning of it will be as ready to you, as any other word. In like manner if the Deaf Perſon diſcern with his Eye one ſingle Articulation, ſuppoſe by the Appulſe of the Lips, he cannot diſtinguiſh whether it be *p. b.* or *m.* But this ſame Articulation joyned with others, in Words and *S*enſe, he having a general perception of the ſubject, whereof you diſcourſe, and a greater than ordinary meaſure of *S*agacity, will not be to ſeek, which of theſe three *Labial* Conſonants you uſed.

There is a common experiment, which will come ſtill near to the caſe in hand; in *Whiſper-*

ing

ing, we Articulate onely *Ore-ſpirital*, and *Naſo-ſpirital* Sounds, and yet uſe words, which conſiſt much of *Ore-vocal*, and *Naſo-vocal* Conſonants, and have no other difference from other Conſonants of the ſame Articulation, but that they are Vocal. And theſe *Vocal* Letters in Whispering we make *Spirital*, and ſo they come to be the very ſame, each with his compere, which is *Ore-ſpirital*; of which I have given 7 pairs in the diſcourſe foregoing. Now, though *b* and *p*, *t* and *d*, *k* and *g*, *f* and *v*, *th* and *dh*, *s* and *z*, *ſh* and *zh*, are but in effect 7 Letters, and have no diſtinction at all, each from his Compere, in *Whiſpering*, neither in reſpect of *Organ*, nor *Articulation*, nor *Sound*: and therefore being ſingly pronounced, cannot

not be diſtinguiſh'd neither by the Eye nor Ear; yet we are not at all perplext with the confuſion of theſe Letters in *whiſpering*, but by our habit and knowledge of Language, can as readily underſtand one another, when we whisper, as when we ſpeak aloud: & yet theſe Conſonants are not much leſs confuſed to the *Ear* in *Whiſpering*, than in *Speaking* they are to the *Eye*.

It is obſervable, that the Hiſtories of thoſe, who could diſcern *Speech* by their *Eye*, are moſt of ſuch, as having had knowledge of Language, and a readineſs in Speaking, falling afterwards into Deafneſs, have loſt the *uſe* of Speech, but ſtill retein the *memory* of it. Now if we can by Induſtry, make our Deaf and Dumb Perſons reaſonably perfect in

in the Language and Pronunciation, he may be alſo capable of the ſame priviledge of underſtanding by the Eye what is ſpoken, though the Letters ſingly pronounced are ambiguous and may deceive him. *In ſhort*, though it be impoſſible for a Deaf Perſon, by his Eye accurately and certainly to diſtinguiſh Letters *ſingly* ſpoken, (as it is likewiſe in words equivocal ſpoken, and Letters whispered, to thoſe that hear;) Yet in tract of Speech, as a dubious word is eaſily known by the Coherence with the reſt; and a dubious Letter by the whole Word; ſo may a Deaf Perſon, having attained a competent knowledge of Language, and aſſiſted by an acute Sagacity, by ſome more evident word diſcerned by his

his Eye, know the Sence, and by the Sence other Words, and by the Words the obſcurer Letters; and ſo, notwithſtanding this difficulty objected, make good uſe of this Inſtitution, not onely to ſpeak, but, in a good meaſure (ſo far as to ſerve for converſe) know what others ſay to him: And the rather, becauſe having learnt by his Eye, and being inured to that kind of obſervation, he is quicker to perceive the Motions of Articulation, and Conjunctures of Letters in Words, than we can eaſily imagine.

Having thus ſurmounted the difficulties, I ſhall mention ſome ſuch things as give encouragement to this enterprize. And *Firſt* that, which was before hinted, that in Deaf and Dumb Perſons, their

their *Neceſſity* excites a great obſervation and ſagacity to ſupply their defects, and to bear up and maintain Converſe with others, who enjoy the benefit of all their Senſes. And being denyed Communication by the *Ear*, their Eyes are the more vigilant, attent and heedful, which renders them much more capable of being improved by directions and inſtructions applyed to that Senſe, and gives a delight and encouragement to thoſe, who teach ſuch apprehenſive Scholars.

2. The onely moveable Organs belonging to the Sence of Hearing, being Two of thoſe Three little *Bones* before mentioned, *viz.* the *Incus* and *Malleus*; and ſo much depending upon the adequate motion of thoſe

Two

Two *Officles* to give due Tenſion to the *Tympanum*, their Motions being ſmall, are eaſily ſubverted, and from thence moſt frequently comes *loſs of Hearing*. Now that which I would infer, is, That in *thoſe* generally the *Auditory Nerve*, is ſound, and by a *branch* of the ſame *Nerve*, that goes between the Ear and the Palat of the Mouth, they can make a ſhift to hear themſelves, though their outward Ear be ſtopt by the Laxe Membrane to all Sounds, that come that way; and ſo they have ſome little pleaſure in ſpeaking, and guide themſelves by that little Hearing, to retein, and improve a habit of Speaking whatſoever they have once been taught.

3. The *Figures* of ſome Articulations are moſt eaſie to be

ſhewed to the Eye, as the Conſonants *Labial*, *Labiodental*, *Linguadental*, and *Gingival*, and *Palatic*, *Occluſe*, and the *Gingival-Lateral*; ſo that who ſoever makes trial, ſhall begin to make ſome progreſs with great ſucceſs and encouragement, and gain ground to make the remaining part of the *Alphabet* more eaſie, by the habit and method of prevailing ſo far onwards.

4. *Language* being defined, a *Connexion of the beſt Signes for Communication*, and *Written Language*, *Viſible ſignes of the ſignes Audible*; And the *Elements of each reſpectively*, and the *correſpondence* and *mutual aſſiſtance* of each to other, being ſuch, as in the foregoing diſcourſe is more fully ſhewn; You have a great help

help, by *ſhewing* Letters and Words *written*, to conduct a Deaf perſon on, in exerciſing him to expreſs the ſame by pronunciation; and what ſoever you gain upon him *this* way, will be reteined, and made uſe of in the *other*. Add to all this the admirable Curioſity and ſingular Excellency of this deſigne, the conſideration wherof will ſuſtein the Patience and animate the Induſtry of him who ſhall undertake it.

Having thus conſidered what ground and incouragement there may be for ſuch an undertaking; I ſhall now in the plaineſt manner I can, lay down ſuch *Directions* and *Rules*, as I my ſelf have made trial of, to inſtruct a Deaf perſon to make uſe of his Organs of Speech, and ceaſe to be Dumb,

enjoying the great felicity of that moſt expedite way of Communication: Which may ſerve, till ſome more able Perſon ſhall be excited, by Improvements and Additions, to give a greater Perfection to this deſigne.

Firſt make your own *Alphabet* according to the Number of Letters and their Natural order. In reſpect of eaſineſs, Conſonants firſt (becauſe their Appulſes are manifeſt) and then Vowels; and in ordering Conſonants reſpect chiefly, either

Their { Sound—p. t. k. f. θ. s. sh. b. d. g. v. ð. z. j. m. n. ŋ. l. r.
Organ—p. b. m. f. v. θ. ð. t. d. n. s. z. l. r. sh. j. k. g. ŋ.
Degree—p. b. t. d. k. g. m. n. ŋ. f. v. θ. ð. s. z. sh. j. l. r.
of Appulſe.

The laſt of theſe I take to be much the beſt order, in which to teach a Deaf Perſon. Then, add the Vowels, ɑ. a. æ. e. i. o. oo. u. ɘ: but ſo accurate a diſtinction will

not

not be neceſſary. The through-underſtanding of the nature of this *Alphabet*, will direct you, *what* and *how many* are the Articulations of Letters, which may be repreſented to the Eye; and what are the other differences of Letters, that you may invent ſome other Artifices, beſides viſible repreſentation, to make a Deaf Perſon learn and apprehend them. This Alphabet muſt be your own *Clew* to guide you; but the Deaf perſon is not to be troubled with it, becauſe he is alſo to learn to write and read as others do; and therefore muſt be taught the common *Alphabet* of that Language, which he is to learn, and muſt uſe thoſe incongruous compoſitions, and other Anomalies of vulgar writing; in which you muſt underſtand

how to manage him, by Reduction of them to the true Alphabet of Nature; in which practiſe, you will (to your coſt) diſcover the inconvenience of faulty Alphabets and Uſages of writing.

Let him firſt learn to write after a *Copy* of all the Letters in the vulgar Alphabet, till his Eye be well acquainted with their Figures, and he be able to write them pretty well. When you begin to teach him to ſpeak, you may uſe this method. Write down in a paper *p.* and *b*; and make ſignes to him to endeavour to pronounce, and guide him by ſhewing him the motion of your own Lips, to offer at one of thoſe Letters: which being the eaſieſt of all, he will with a little endeavour ſtumble upon one of them.

Shew

*S*hew him upon the Paper the Letter, which he hits upon, and much applauding and encouraging him, make him repeat it often, till he be very perfect both in the pronunciation and in the written Character of that Letter: ſuppoſe it was *P*. Then next point at *B*. and direct him with the ſame motion of his Lips to pronounce it. With long trying he perceiving, that you require him to make a different Letter with the ſame Figure of the Mouth, will at laſt find out how to do it, and utter ſomething different from *p*. which will be *B*, though he underſtand not, wherein the difference lies, but finds it out; and being excluded from *p*, and labouring to pronounce another Letter with the ſame Figure of

B.

his Lips, make him perfect in B. And let him diligently practiſe theſe two Letters, pointing ſometimes at one, ſometimes at the other in the paper, till he be perfect in both.

Next ſhew him the poſture of the end of the Tongue cloſe to the Goums, and he will without much difficulty be brought to pro-
T. nounce either *T*, or elſe *D*. Uſe the ſame method as before, and which ſoever he ſpeaks, ſhew it him written, and having the other alſo written in the paper, ſhew him *that*, after he has con'd the *Firſt*, and require it of him, ſtill keeping the ſame poſture of the Mouth: which having obtained of him, make him perfect in them both, before you carry him further. Next teach him in like manner

manner *K* and *G* calling them *Ka* and *Ga*; but to ſhew him the poſture of theſe, you had need provide a Palat with the upper jaw, of Plaſter, and the ſhape of a Tong of ſtuffed Leather, which will be uſeful to you to deſcribe to him, how the Boſſe of the Tong in theſe Letters is born cloſe in the inner part of the Palat near the Throat; and more uſeful, when you would deſcribe the Vowels: but yet both may be done without it. If you find him ſtick at this Letter, put your finger to the out-ſide of his Throat, whilſt he is offring to pronounce, and check his Breath there, and he will ſoon perceive what he is to do, and can ſcarce chooſe but ſpeak *K*. When he has got one of theſe Letters perfect, gain the other K. G.

ther by the ſame way of *Excluſion*, as before.

Having thus gained of the *Occluſe* Conſonants, three *Ore-ſpirital*, *p. t. k.* and three *Ore-vocal*, *b. d. g*; there remain the three *Naſo-vocal*, *m. n. ng.* which will be moſt eaſily learnt by the ſame way of *excluſion*, requiring him to pronounce a *Labial* Letter, that is, neither *p.* nor *b.* and pointing to his Noſe, to breath that way, he will ſoon pronounce *m.* and in like manner *n* and *ng.*

M. N. Ng.

The *Dental* Conſonants are very eaſie, therefore let them be the next, and firſt the *Labiodentals*, *f*, *v*, which, as alſo the *Linguadentals*, *th*, *dh*, he will ſoon learn by the method before directed; though *dh* may be let alone, being never

F. V. Th. Dh.

never written ſo in our Language. But ſince a Conſonant, or at leaſt ſome of the Conſonants, cannot well be pronounced alone, without a Vowel joyned to them, it may be conſidered here, whether in naming the Conſonants, it is better that the Vowel go before, or follow it? and what Vowel? In our *vulgar* Alphabet, it is obſervable, that in all *occluſe Conſonants*, except the *Naſals*, the Vowel follows, as *be*, *ce*, *de*, *ge*, *ka*, *pe*, *qu*, *te*; but in the *pervious Conſonants*, and the *Naſals*, becauſe they have paſſage through the Noſe, the Vowel precedes; as, *ef*, *el*, *em*, *en*, *er*, *es*: onely *x* hath ſomething peculiar; and in that it is accounted a double Letter (which it is not in the *Natural* Alphabet, any more than *S*,)

we

we may imagine it to have been anciently pronounced, as it is now by the *Italians*, *Ds* or *Ts*; and ſo to be called *Zad* from the *Hebrew Tsadi*: but yet to make out my obſervation, we, who pronounce it as a ſingle Letter, do as often call it *Yzard*.

Now, as to our preſent purpoſe, we need not be curious, How, nor which Vowels we joyn to the Conſonants, ſince every way they ſerve to expreſs the power of the Conſonant audibly, which is all that is intended: but onely our regard muſt be to chooſe the way, that may ſeem more eaſie; to which end, ſuch a pronunciation, as this that follows, may be ſuitable: *be, ce, de, fa, ga, he, ja, [zha] ka, la, ma, na, pe, qu, ra, ſa, te, va, wa, eks, ya, za.* The reaſon why

I place the Vowels after the Conſonants, is, Becauſe the opening of an *Appulſe* before a Vowel has a ſmart Spring and force of the Muſcle, the motion being aſſiſted by the Impulſe of Breath, and ſo is more ſenſible, and conſequently more eaſie to be obſerved and learnt, than the ſhutting of the Organs to make an *Appulſe* (*i. e.* a Conſonant) after a Vowel, becauſe in this the Motion is *reſiſted* and hindred by the force of Breath, as much as it was *aſſiſted* in the other.

This is eminently ſeen in the *Vowel Conſonants*, *Y*, *W*. For when they precede, as *Ya*, *Wa*, there is none but is eaſily perſwaded, that they are as Conſonants, but when they follow, as *Ay*, *Aw*, their force is ſo abated, that they are miſtaken

ken for *meer* Vowels. And ſo, as I conceive (but with ſubmiſſion to better Judgements) came in the Notion of *Diphthongs* into the world; in all which, that are accounted properly ſuch, either *Y* or *W*, or (which is the ſame in effect) *i* or *u*, follow the other Vowel, as *ai*, *ei*, *oi*, *au*, *eu*, *ou*: onely the *Greek* hath *ui*, which if it is to be pronounced in one Syllable, and that pronunciation be Genuine; it is no other than our *Why*, as ὑῖος, *Whios*; where *i* is the Vowel, and *u* in the nature of a Conſonant.

But to return, we need not be tyed to either way of naming the Conſonants, whether with the Vowel *before* or *after*; but in practiſing to teach, try both ways, eſpecially in ſonorous Conſonants,

l. m.

l. m. n. r. s. z. and accept of that, which is hit on firſt, with whatſoever Vowel, and whether before or after the Conſonant, becauſe it equally ſerves our purpoſe to expreſs the power of the Conſonant. But when you have brought him to pronounce all Syllables forward and backward; you may then at pleaſure bring him nearer to the vulgar pronunciation of the *Alphabet*, by writing it again, as you would have him ſetled in pronouncing it after this manner, *a, be, ce, de, e, ef, ga, he, i, ka, el, em, en, o, pe, qu, ar, es, te, u, va, we, ex, ya, zad*, adding *dha, tha, ſha, zha.*

This being premiſed, let the next Letters he learns, be *s* and *z*. Your Schollar by this time will be pretty perfect at finding out an

Ore-

Ore-voeal to an *Ore-ſpirital*, or contrary, in the ſame poſture of Organs, as he ſhall happen firſt to hit, and you will have need of ſomething of the ſame kind of Art, though in another way, to teach him *s* or *z*. Shew a *Gingival* Appulſe, and withal by holding your Mouth near to the back of his hand, bare, whilſt you pronounce one of theſe Letters before him, make him perceive that it is a *pervious* Letter, *i. e.* that breath paſſeth out of your Mouth to your Tongs end, whilſt you ſpeak it: and ſhew him that *T.* is cloſe, but this lets breath paſs; and with often trial he will hit on it (though at firſt it may be *liſpingly* or imperfectly;) there being onely *L* or *R* remaining, which are made by that kind of poſture

and

and *L* ſo different, and *R* ſo difficult, that he will moſt likely by this kind of excluſion find out *S*, and having gained that, he will ſoon have *Z*. Z.

Then ſhew him the poſture of *Sh.* with the Artificial Tong and Palat, and guiding him from *S* to *Sh*, and making him underſtand by Signs, that they reſemble in manner of Sound, and differ in poſture, he will perceive and learn it; and conſequently *Zh*. And if you pleaſe now, or after he be more perfect in the reſt of the Letters, and entred upon *Syllables*, teach him *J. i. e. dzha*, and *cha.* i.e. *tsha.* He will ſoon learn *L.* by being ſhewed to make a ſtop with the end of his *Tong* againſt his Goums, as in *t* or *d.* and let the Breath paſs by the Cheeks or Sh. Zh. J. Ch. L.

ſides of the Tong; and if you write down *tl*, and put him to pronounce it, he will perceive it the eaſier; and he can hardly chuſe but make it Vocal, if he pronounce it with a Vowel either be-

R. fore or after. For *R*, ſhew him the *Gingival* poſture of the Tong, and putting your Mouth cloſe to his Hand or Cheek, while you pronounce it, make him ſenſible of the *jarré*; which with often trial he will be brought to imitate, though for a while it will be troubleſome to him, by reaſon of its roughneſs.

When you have thus made him Maſter of all the *Conſonants*, and

H. taught him alſo to breath out *H*, and with patience, and often repetition (but with all ſweetneſs and pleaſantneſs, and great care that

that you do not tire nor vex him) ſetled him perfect in the pronunciation of them, and in the knowledge of their Characters; then proceed to the *Vowels*. And *firſt*, carefully obſerve, what Vowels he chanced to joyn with the Conſonants in naming them, which might be more than one, as *a*, and *e*, at leaſt. Write that Vowel after the ſame Conſonant, and let him ſpeak it, as he did before; after write the Vowel alone, and ſhew him the open Figure of the Vowel, and make him pronounce it, which he will readily do, having the ſound of it already familiar to him, in naming the Conſonants as aforeſaid: and thus 'tis likely you will have *a.* and *e.* to teach him, if not more, and bring him into ſome acquaintance with

Vowels. Then ſhew him the po-
i. ſture of *i* by bearing your Arti-
ficial Tongue near the Palat, and
make him perceive, that the Breath
is ſqueezed out at a *narrow* paſ-
ſage, and he will eaſily learn it;
and when that is done, ſhew him
to add the Motion and Figure of
the Lip to it, and that will teach
u. him *u*. For *o*, ſhew him, as well
o. as you can, the figure of the
Mouth, and make him round his
Lips and ſound in his Throat.
oo. And in like manner teach him *u*
by his Mouth and Lips bearing at
the corners, repreſenting it by *oo*.
And when you come to *Syllables*,
let him underſtand ſome words,
wherein *u* has the like ſound, but
without the Lips, as *But*, *Full*,
w. *&c.* Laſtly, teach him *wa*, *ya*, de-
y. ſcribing them both *wa*, *ya*, and *ooa*,
ia;

ja; and *au* (which is the natural ɑ;) and then he will be ſufficiently, for the preſent, inſtructed in Vowels. And now he being acquainted with ſome Character of every ſound, you may at pleaſure make him underſtand *Anomalous* pronunciations, by ſhewing him ſuch other known Letters, or Compoſitions of Letters, which have thoſe ſounds, as has already been done in *che*, *tſhe*, *j*, *dzhe*, &c. ɑ

Whereas the *Vowels* are much more difficult to be taught; you will find, in this method of falling upon them laſt, great help by the Apprehenſiveneſs, he will have already gained in learning the *Conſonants*, and more forwardneſs in attempting to pronounce; by which, when you require one

Vowel of him, he will ſometimes ſtumble upon another, which you are preſently to lay hold of, and keep him to ſhew him the Character of it, and it will be equal gain to you; and ſtill the more he has learnt the remainder will be ſo much eaſier, as there remain fewer differences of pronunciation for him to wander in.

Now beſides theſe directions already given, you will find when you come to practiſe, that your own earneſtneſs and contention to effect what you are about, will continually, whilſt you are at work with him, ſuggeſt to you ſeveral Artifices, whereby to make him better apprehend, what you would have him pronounce; which cannot ſo well be thought of before hand, nor Rules for it ſet down

down in writing. Now when the labour and patience of getting the Alphabet is over, the main difficulty is overcome.

Having thus made him learn the *Alphabet* and the Characters of it, next (or together with the other) teach him an Alphabet upon his fingers, or leveral parts of his hand, by placing the Letters there, which you may deviſe at pleaſure: for example; making the joynts of his fingers of his *left* hand, both on the inſide, and alſo on the outſide, to ſignify ſome Letter, when any of them is pointed at by the fore-finger of the *right* hand, or by any kind of *Feſcue*. Particularly, let the extremity of the Thumb and four fingers of the Left hand, ſignify *a. e. i. o. u.* The middle of the inſides

of them, beginning at the Thumb, *b*, *c*, *d*, *f*, *g*. The bending of the Fingers on the inſide next the Hand, *h*, *k*, *l*, *m*, *n*. The backſide joynts below the Nails, *p*, *q*, *r*, *s*, *t*. The middle joynts, *v*, *w*, *j*, *y*, *z*; any where towards the Wriſt, or croſſing the two forefingers, *x*. And for thoſe ſimple Letters, which are uſed in writing to be expreſſed by Compoſitions, as *th*, *ſh*, *ng*, &c. there is no help for it, but he muſt be taught accordingly, to comply with that faulty way of writing, which they call *Orthography*, and be directed to deſcribe them ſo, and write them ſo too, both that *he* may underſtand what others write, and *they*, what he. You may draw two Portaitures, one of the inſide, the other of the backſide of the Hand,

and deſcribe the Letters upon the places reſpectively, this way, or ſome other, that you ſhall think better, and make him perfect in this *Finger-language.* And then you will find a great pleaſure and eaſe, by practiſing with him that way, readily at all times to pronounce what words you deſcribe with your fingers, and often exerciſe his Pen to write down what you dictate to him; letting him know, when a word is finiſhed, to leave ſome ſpace between that and the next word. And when you would gratify the Curioſity of others, who ſhall deſire to hear him ſpeak, this way will be moſt uſeful and ready. And you may, when you pleaſe, have the recreation of ſurprizing thoſe with admiration, who ſhall hear the *Deaf* perſon

perſon pronounce whatſoever they (though with privacy) ſhall deſire, without your ſeeming at all to guide him with your Eye or Mouth, otherwiſe than by beckoning to him to ſpeak, whilſt you ſecretly deſcribe it with your fingers.

The next thing you are to do, is to write down (and it would do well, in a pocket-paper-book, to be ready at hand) all kinds of *Syllables*, and practiſe him to pronounce them. Firſt ſyllables of two Letters, *ba, be, bi, bo, bu, boo*; *ka, ce, ci, coo, cu*; *da, de, di, do, du, doo*; *ad, ed, id*, &c. And then of more Letters, *bla, bra, cla, kna, cra, dla, dna, fla, tra, gla, gna, gra, pla, pra, qua, ſca, ſha, ska, ſla, ſma, ſna, ſpa, ſqua, ſta, ſua, tla, tra*, &c. *ſcra, ſdna, ſdra, ſpla, ſtra*, &c. and all theſe backwards

wards, as, *alb*, *arb*, *alk*, *ank*, *ark*, *ald*, &c. And when you have made him perfect at Syllables, then you may reckon, that you have taught him all pronunciation of Language, ſince all words are onely ſome of theſe Syllables, or elſe Syllables compounded of theſe, as *ſtrand*, *ſtra*, *and*; or elſe being *poly-ſyllables*, are but a joyning of more of theſe Syllables, which is nothing elſe but pronouncing theſe Syllables one after another, making a diſtinction between every word.

Next, you are to teach him the knowledge of *Words*, (but it would do well in the mean time, to make him ſpeak and write ſome Sentences, to inure him to *Connexion* of *S*peech.) And here you may eaſily ſhew him Viſible Bodies

dies, and Colours, and tell him the names of them, and you may by ſignes make him underſtand *local* Adverbs, and ſome others of Qualities, *well*, *ill*, &c. as alſo ſuch *Adjectives*, as repreſent ſenſible qualities, as *bitter*, *ſweet*, &c. and many other kinds. Every paſſage will give ſome occaſion to make him underſtand more of the Particles and Bands of Speech.

I had once in my thoughts to contrive a Method of *Grammar*, and *Dictionary* for this uſe. Of *Grammar*, more than I can now comprize in ſhort hints. And the later, Alphabetically containing the words of the Language, which the Deaf perſon is to learn; as ſuppoſe, *Engliſh*. And the Expoſition, being a repreſentation of the Figure of ſo many words, as

can

can be deſcribed, and of the reſt by ſuch other ſignes, as might be thought of, referring the *Synonyma's* to thoſe, which have Expoſitions; by which he might help himſelf to know the *meaning* of ſuch Words as he ſhould meet with, and by often looking on it, gain the knowledge of Words: But the occaſion of exciting and exerciſing my thoughts being unhappily removed, I went no further; but hope to ſee them perfected by thoſe, who ſhall meet with ſuch like occaſions. And indeed, ſuch a Work, as this, is not to be perfected by ſtudy alone; but muſt and will receive many hints and helps, and to be thought on otherwiſe, whilſt the endeavour is excited, being under experiment and practice. But ſo far

as

as I had occaſion to ſtudy, and practiſe with happy ſucceſs, I have faithfully imparted, and wiſh, it may be uſeful to thoſe who ſtand in need of it.

An

An Experiment concerning Deafneſs *cauſed by want of due* Tenſion *of the* Membrane *in the Ear call'd the* Tympanum; *ſee* p. 113.

A Young Gentleman known to divers of the *R. Society*, was born Deaf, and continued Dumb till his age of 10. or 11 years. His Mother when ſhe was great with him, received a ſudden fright; by occaſion whereof, the Childs head and face were a little diſtorted, the whole right ſide (as I remember) being ſomewhat elevated, and the left depreſſed; ſo that the paſſage of his left Ear was quite ſhut up, and that of the right Ear proportionally diſtended, and too open. This Gentleman being for ſome time recommended to my

my Care, amongſt other things, I ſpent ſome thoughts in ſearching the cauſe of his Deafneſs in the Ear, whoſe paſſage was open. And having found, that the Auditory Nerve was not periſhed, but that he could hear the ſound of a Lute-ſtring, holding one end thereof in his Teeth; and had ſome perception of any very vehement ſound, I ſuppoſed the defect to lie in the want of due Tenſion of the *Tympanum* of his *Ear*; whoſe uſe I took to be, onely to preſerve the Auditory Nerve, and Brain, and inward parts of the Ear from *outward* injury by Cold, Duſt, *&c.* and to be no more to Hearing, than glaſs in the window is in a Room to *Seeing*, *i. e.* as the one intromits Light without Cold or offence to thoſe in the room,

room: ſo the other permits ſound to paſs, and ſhuts out what elſe might offend the Organ; as appears in the experiment of breaking the *Tympanum* of a Dog, who hears never the worſe for ſome few weeks, till other cauſes, as Cold, *&c.* vitiate the Organ.

But for the free paſſage of the ſound into the Ear, it is requiſite, that the *Tympanum* be tenſe and hard ſtretched; otherwiſe the laxneſs of that Membrane will certainly dead and damp the ſound, And becauſe the *Tympanum* is fixed in the circumference thereof to the *Annulus Oſſeus*, and ſo is not capable of Tenſion that way, in ſuch manner as a Drum is braced; there remains another way, by drawing it at the Center into a *Conoid* form. And that is the prin-

cipal Office of the three *Ossicles*, *viz.* the *Malleus*, *Incus*, and *Stapes*, of which the *Stapes* is fixed to the Inner-bone in the *Foramen Ovale*; the *Malleus* in the extremity of that Processe thereof, which is more direct (though somewhat bowing) lies along fixed to the *Tympanum*; and on the other end is joyned to the *Incus* by a double or Ginglymoid joynt; such as in which the upper and lower double Teeth meet one another. The *Incus*, scituate between the two former, is one way joyned to the *Malleus*, by such a joynt as last mentioned: the other end, being a Processe, is fixed with a ligament to the *Stapes*. In the *Os Petrosum* is scituate a Muscle from which a *Tendon* is fixed to the end of another more perpendicula

cular proceſs of the *Malleus*, (ſome deſcribe two *Tendons* from the ſame Muſcle, one faſtened to the aforeſaid Proceſs, the other to the neck of the *Malleus*) which drawing the *Malleus* inwards, the joyned ends of that Bone, and the *Incus* receding, make a more acute Angle at that joynt, and give a greater Curvity to the poſture of the ſaid three Oſſicles; the ligament which faſtens the *Incus* to the *Stapes* (which is fixed to an immoveable Bone) complying with the receſs of the other end, ſide-ways at the joynt; and the *Malleus* being fixed to an extenſible Membrane, follows the Traction of the Muſcle, and is drawn inwards to bring the Terms of that line (which the new poſture of the bones

makes) nearer, in proportion as it is Curved, and ſo gives a Tenſion to the *Tympanum*, by drawing after it the Center of the *Tympanum*, and ſo ſtretching the ſurface of it, from a Plain to a Conoid Figure within the ſame Circumference.

And I conceive, the action of this Muſcle does ordinarily and conſtantly draw the *Tympanum* to a moderate Tenſion; but when we have occaſion to liſten, and give a more particular attention to ſome ſound, the action of that Muſcle is then more intenſe, and the *Tympanum* is drawn to a more then ordinary tenſion, ſo to facilitate the paſſage of the ſound.

Now as to the caſe of the young Gentleman before mentioned, I ſuppoſed either the Muſcle by

by that convulsive starting Motion in the Womb to be overstrained, and to have lost its Action; or the *Membrane* by that greater aperture of the Organ to be overstretched, and afterwards to remain so flaccid, that it was beyond the activity of the Muscle and Curviture of the *Ossicles* to give it a due Tension; or peradventure there was a concurrence of both Causes. Which due Tension, if by any remedy it might be restored, I assum'd that he might recover his hearing in that Ear: to which end I advised that excellent Lady his Mother, to consult with Learned Physitians, if by some adstringement Fumes, or otherwise he might find help.

And for Experiment, I thought of a *Temporary* way, by the im-

pulſe of any *vehement* ſound; as of a Drum beaten near him: which ſound, during its continuance, muſt needs give the *Tympanum* a Tenſion, by driving and ſwelling it inwards, as a freſh gale of wind fills the ſails of a ſhip; and the Experiment ſucceeded according to my expectation: for ſo long as I beat a Drum faſt and loud by him, he could *hear* thoſe who ſtood behind him, calling him gently by his Name (which he underſtood, having learned to ſpeak and pronounce it among o-other words;) and wen the Drum ceaſed, he did not hear the ſame Perſons, when they again very loud called him by his Name. And by this we tryed ſeveral times, by beating of the Drum again, and ceaſing it; and he ſtil heard them, when

when the Drum beat, and heard them not, when it ſtopt.

Since that time, a Gentleman about *Oxford-ſhire*, ſometimes Student in *Chriſt-Church*, being in a great degree of Deafneſs, after I had told him of this experiment, call'd to mind, that he never heard ſo well and eaſily, as when he was diſcourſing with company in a Coach, whilſt it went faſt, and made a great rumbling noiſe in *London*-ſtreets: by which he was induced to believe, that the Impediment of his Hearing was of the like nature with the other.

At the ſame time when this was read before the *R. Society*, a Perſon of Quality of the Society remembred

membred to have found in himſelf, (being at ſometimes ſubject to thicknes of Hearing) the like effect with this laſt mentioned, though he had not before conſidered the reaſon of it; his acquaintance having often obſerved to him, that at ſuch times of his Deafneſs, he heard them very well, whilſt they talked together in a Coach in the paved Streets.

FINIS.